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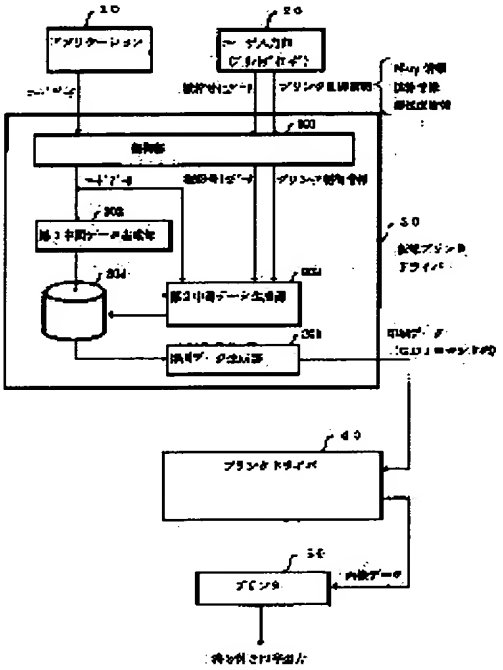
(54) PRINT SYSTEM AND DATA PROCESSING METHOD THEREFOR

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a print system and a data processing method therefor in which the data of various applications can be printed out of any printer.
SOLUTION: A virtual printer driver 30 is arranged between an application 10 and a printer driver 40. At the virtual printer driver 30, a first intermediate data generating part 302 generates first intermediate data capable of reproducing a graphic device independent (GDI) code from application data instructed to be printed from the application 10, and a second intermediate data generating part 303 generates second intermediate data by embedding a mechanically readable code into the first intemediate data. Further, a print data generating part 305 generates print data by reproducing the GDI code from the second intermediate data and sends them to the printer driver 40.



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CLAIMS

[Claim(s)]
[Claim 1] In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data -- this -- the printing system characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.
[Claim 2] Said 2nd medium data origination means is a printing system according to claim 1 characterized by being constituted by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data.
[Claim 3] Said machine-readable sign is a printing system according to claim 2 characterized by being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information.
[Claim 4] Said 2nd medium data origination means is a printing system according to claim 1 characterized by being constituted by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions.
[Claim 5] Said printing control information is a printing system according to claim 4 characterized by being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data.
[Claim 6] The printing system according to claim 1 carry out providing further a movement directive means to direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description.
[Claim 7] Said non-printed processing actuation is a printing system according to claim 6 characterized by being any one at least of the processing which registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation which carries out facsimile transmission of said 2nd medium data.
[Claim 8] while creating the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer -- from said 1st medium data -- this -- the data-processing approach of the printing system characterized by to create the print data which can be processed by said printer from said 2nd medium data after creating the 2nd medium data of the same data format as the 1st medium data.
[Claim 9] Said 2nd medium data is the data-processing approach of the printing system according to claim 8 characterized by creating by compounding the machine-readable sign in which machine reading is possible to said 1st medium data.
[Claim 10] Said machine-readable sign is the data-processing approach of the printing system

according to claim 9 characterized by being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information.
[Claim 11] Said 2nd medium data is the data-processing approach of the printing system according to claim 8 characterized by creating by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions.
[Claim 12] Said printing control information is the data-processing approach of the printing system according to claim 11 characterized by being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data.
[Claim 13] The data-processing approach of the printing system according to claim 8 characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.
[Claim 14] Said non-printed processing actuation is the data-processing approach of the printing system according to claim 13 characterized by being any one at least of the processing which registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation which carries out facsimile transmission of said 2nd medium data.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to amelioration of the data-processing approach for performing the printed output of the above-mentioned application data to any printers from all applications with a print facility in detail with respect to the printing system which prints the data by which printing directions were carried out with application by the printer.
[0002]
[Description of the Prior Art] In case the electronic file created and edited with application is printed, the system which also embeds the sign (machine-readable sign) in which machine reading is possible together, and prints it with the electronic file concerned is known. In this kind of system, there is a thing using the identification information of an electronic file as the above-mentioned machine-readable sign. In this case, after embedding the above-mentioned machine-readable sign and carrying out the printout of the text file by which printing directions were carried out from application, by reading and scanning this output form with a sign reader (scanner), the above-mentioned machine-readable sign is recognized, it matches with this machine-readable sign, and employment of managing an electronic file is attained.
[0003] The electronic document retrieval system of a publication is known by JP,8-50598,A as an example of the conventional system which has a sign addition print facility aiming at management of such a print file. In case it prints out an electronic document, this system outputs the additional information over the electronic document concerned to a form, simultaneously, is a system which stores an electronic document in a database, and is enabling retrieval of an electronic document by a bar code being used as additional information especially outputted to a form, and reading this bar code.
[0004]
[Problem(s) to be Solved by the Invention] In order to usually perform the printed output of the machine-readable sign to an electronic file using a certain printer in this kind represented by the above-mentioned electronic document retrieval system (JP,8-50598,A) of conventional system, it cannot be overemphasized that the printer driver which may drive this printer, and the application which suits the printer driver concerned are prepared.
[0005] This means that the consideration which can print the electronic file created with a certain application by any printers was not made in this kind of conventional system.
[0006] There was a trouble that construction of a system which the printer used is regulated by the application to be used, reads the machine-readable sign after embedding and printing a machine-readable sign to an electronic file as a result of regulating the application used by the printer used, and searches the electronic file concerned with a system conventionally by this was restricted remarkably.
[0007] Then, the object of this invention is to offer the printing system which can perform the printed output of an application data to any printers from all the applications that have a print facility, and its data-processing approach.
[0008] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when embedding and printing a machine-readable sign on an application data.

[0009] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when performing a N-up print etc. to the above-mentioned application data.
[0010] Furthermore, other objects of this invention are to offer the printing system which can perform non-printed processing actuation and its data-processing approach of the application data concerned in parallel to printing processing of the above-mentioned application data.
[0011]
[Means for Solving the Problem] In order to attain the above-mentioned object, invention of claim 1 In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data -- this -- it is characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.
[0012] Invention of claim 2 is characterized by constituting said 2nd medium data origination means by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 1.
[0013] Invention of claim 3 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 2.
[0014] Invention of claim 4 is characterized by constituting said 2nd medium data origination means by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 1.
[0015] Invention of claim 5 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 4.
[0016] Invention of claim 6 carries out providing further a movement-directive means direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description in invention of claim 1.
[0017] Invention of claim 7 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 6.
[0018] while invention of claim 8 creates the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer -- from said 1st medium data -- this -- after creating the 2nd medium data of the same data format as the 1st medium data, it is characterized by to create the print data which can be processed by said printer from said 2nd medium data.
[0019] Invention of claim 9 is characterized by creating said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 8.
[0020] Invention of claim 10 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 9.
[0021] Invention of claim 11 is characterized by creating said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is

directed along with said printing directions in invention of claim 8.
[0022] Invention of claim 12 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 11.
[0023] In invention of claim 8, invention of claim 13 is characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data, when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.
[0024] Invention of claim 14 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 13.
[0025]
[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the block diagram showing the outline configuration of the printing system concerning the gestalt of 1 operation of this invention. This printing system With the application 10 and application 10 which have data editing and a print facility at least The code data of the electronic file by which printing directions were carried out The machine-readable sign which embeds by (the content of the electronic file) and is printed The printing conditions inputted from the user input section 20 which inputs printing conditions, such as coded data-ed for obtaining and a printing parameter (printer control information) of this electronic file, and the user input section 20 are followed. The print data in which printing processing is possible by the printer 50 from the above-mentioned code data By actuation control of the virtual printer driver 30 to generate, the printer driver 40 which drives a printer 50 based on the print data outputted from this virtual printer driver 30, and this printer driver 40 The printer 50 which carries out the printed output of the above-mentioned print data is provided, and it is constituted.
[0026] The virtual printer driver 30 prepared between application 10 and a printer driver 40 here The above-mentioned printing conditions of being inputted from the 1st medium data generation section 302 which generates the 1st medium data from the above-mentioned code data inputted from application 10, and the user input section 20 are followed. The 2nd medium data of the same data format as the 1st medium data concerned from the above-mentioned 1st medium data The print data which a printer 50 can printing process are generated from the 2nd medium data stored in the data storage section 304 which stores the 2nd medium data generation section 303, the 1st medium data, and the 2nd medium data to generate, and the data storage section 304. The control section 301 which controls in generalization the print-data generation section 305 sent out to a printer driver 40, the above-mentioned 1st medium data generation section 302, the 2nd medium data generation section 303, the data storage section 304, and the print-data generation section 305 is provided, and it is constituted.
[0027] Next, in this printing system, the outline actuation in the case of printing the electronic file by which printing directions were carried out from application 10 is explained with reference to the flow chart shown in drawing 2 .
[0028] In this printing system, when it is going to print the electronic file of the arbitration generated by the application 10 concerned from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions of an electronic file that the above-mentioned printing directions were made (step 202). there be the size of a form besides the coded data-ed for obtain the machine-readable sign embed to the data of an electronic file with which the printing directions as requirements for a printing condition which can be input be made from the user input section 20 using the above-mentioned print dialog to the printing directions from application 10 (data to encode) and the sense, the propriety of N-up printing or amplification/cutback printing, and various information on margin information so that

the example of drawing 3 may also show.
[0029] Completion of setting-out actuation of the printing conditions by this print dialog inputs into the virtual printer driver 30 a printing parameter, coded data-ed, etc. to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again from the above-mentioned application 10, respectively.
[0030] In the virtual printer driver 30, first, by the 1st medium data generation section 302, the 1st medium data are generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. The 1st medium data have the format which can reproduce the GDI (Graphic Device Independent) command in step 213 mentioned later (rendering). As an example of this 1st medium data, various meta files, such as WMF (Windows Meta File) and EMF (Enhanced Meta File), are raised (Windows is the trademark of U.S. Microsoft). In addition, about the 1st medium data, if the requirements that the GDI command is reproducible are satisfied, even if it is the format for which it opted uniquely, it will not interfere.
[0031] On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data stored in the data storage section 304 (step 212), and stores them in the data storage section 304.
[0032] One of the processings of this step 212 has the processing which embeds this machine-readable sign to the 1st medium data after encoding the coded data-ed inputted from the user input section 20 as a machine-readable sign, and generates these 1st medium data and isomorphism-type data (the 2nd medium data). Moreover, there is processing which carries out data conversion of the 1st medium data to the 1st medium data concerned and the data (the 2nd medium data) of business, such as N-up printing of an isomorphism type and amplification/cutback printing, as other one based on the printing parameters (N-up printing, amplification/cutback printing, etc.) inputted from the user input section 20.
[0033] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213). When it consists of WMF(s) and EMF(s) which the 2nd medium data mentioned above about this processing, it can print by Windows API.
[0034] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the above-mentioned print data (GDI series of commands) to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the above-mentioned print data.
[0035] Thus, the printing system of this invention arranges the virtual printer driver 30 (application realizes) between application 10 and a printer driver 40 (on an interface), first generates the medium data which can reproduce the GDI code in this virtual printer driver 30 from the application data by which printing directions were carried out from application 10, by reproducing the GDI code based on this medium data further, generates print data and gives them to a printer driver 40. That is, in the printing system of this invention, the virtual printer driver 30 will hit application, if it sees from an application side and will see from a printer driver 40 side in a printer driver. By making such a virtual printer driver 30 intervene, the printer output of various gestalten, such as embedding printing of a machine reading sign, N-up printing, or amplification/cutback printing, is realizable from all the applications 10 equipped with the print facility to any printers 50.
[0036] Next, the example of the printing processing actuation in this printing system is explained in full detail with reference to the flow chart shown in drawing 4 . Drawing 5 is outline block diagram **** of this printing system used in order to explain the printing processing which met the flow chart shown in this drawing 4 . In addition, especially the flow chart shown in this drawing 4 corresponds to the printing processing in the case of embedding and printing a machine-readable sign from a user to the electronic file by which printing directions were carried out. In this case, as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 6 , the thing (it expresses with sign 303A) possessing the code data analysis section 3031, the

embedding data generation section 3032, and the merge-application section 3033 is used.
[0037] As shown in drawing 5 , the virtual printer driver 30 exists between the printer drivers 40 by which this printing system controls application 10 and a printer 50, and, the virtual printer driver 30, application 10, and in between, OS (operating system) intervenes further. Application 10 has the function which displays a printing dialog as shown at the time of printing of the electronic file generated by the application 10 concerned, for example, this drawing upper part. In the printing dialog of this application 10, the print dialog of the user input section 20 opens by choosing a property. It seems that this print dialog is shown in drawing 3 . A user inputs a printing parameter, data (coded data-ed) which it is going to encode of the electronic file which it is going to print from the above-mentioned application 10 using this print dialog.
[0038] In the above-mentioned application 10, while editing a certain electronic file (step 401), the virtual printer driver 30 and printer driver 40 which intervene between this application 10 and printer 50 are in an idle state, respectively. At this time, OS which controls activation of the above-mentioned application 10 is supervising whether a certain event was directed from the above-mentioned application 10 (step 411).
[0039] In this condition, if there are printing directions from the above-mentioned application 10 to the electronic file under above-mentioned edit (step 402), in OS, an event occurs, and it recognizes that that event is printing directions (step 411 YES), and motive directions are sent out to the virtual printer driver 30 (step 412). Thereby, it will be in activation status, and first, the virtual printer driver 30 processes initialization (step 421), subsequently to a printer driver 40 sends out starting directions (step 422), and waits for the advice of the completion of initialization from a printer driver 40 after that (step 423).
[0040] On the other hand, a printer driver 40 returns advice of the completion of initialization to the virtual printer driver 30, after processing initialization with the starting directions from the virtual printer driver 30 (step 431). The virtual printer driver 30 will notify the completion of initialization to OS, if the above-mentioned advice of the completion of initialization is received (step 423 YES).
[0041] If it is, on the other hand, supervising whether there is any advice of the completion of initialization from this virtual printer driver 30 by OS after starting command sending out to the above-mentioned virtual printer driver 30, and advice of the completion of initialization is received from the virtual printer driver 30 in this condition (step 413 YES), advice of a printing preparation completion is sent out to application 10 by recognition that preparation of the virtual printer driver 30 concerned completed (step 414).
[0042] Moreover, in application 10, after emitting printing directions in step 402, it is supervising whether processing of OS was completed, and judges that processing of (step 403YES) and OS was completed by receiving advice of a printing preparation completion from OS, and code data are outputted to the OS (step 404).
[0043] In OS which received this code data, predetermined code processing service is carried out (step 415), and the code data after this service processing are sent out to the virtual printer driver 30.
[0044] As processing of the above-mentioned step 404 -> step 415 mentioned above, a print dialog (the user input section 20) as shown in drawing 3 based on the printing directions from application 10 displays, and it corresponds to the processing which inputs by the user using the above-mentioned print dialog in the printing parameter to the code (encoded code) and the above-mentioned code data which it is going to encode to the content of a text file for [which is inputted from application 10 by the above-mentioned printing directions] printing (code data). The encoded code and printing parameter which are inputted using the code data inputted from these applications 10 or the above-mentioned print dialog are outputted to the virtual printer driver 30 through the above-mentioned code processing service.
[0045] In the virtual printer driver 30, if the code data outputted by processing of the above-mentioned step 415 in OS are received (step 424), first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data (step 425), and it stores in the data storage section 304.

[0046] Moreover, in 2nd medium data generation section 303A (refer to drawing 6) of the virtual printer driver 30, while the above-mentioned code data received from OS are analyzed in the code data-analysis section 3031 and this analysis result is sent out to the merge-application section 3033, the machine-readable sign which should be embedded to the code data by which printing directions were carried out [above-mentioned] based on the coded data-ed inputted from the user input section 20 in the embedding data generation section 3032 is generated (step 426), and it sends out to the merge-application section 3033.
[0047] Furthermore, after the merge-application section 3033 reads the 1st medium data from the data storage section 304, by merging into the above-mentioned 1st medium data the machine-readable sign generated at the above-mentioned step 426 according to the printing parameter into which it is inputted from the analysis result and the user input section 20 in the code data analysis section 3031, it generates the 2nd medium data (step 427), and stores them in the data storage section 304. Here, the 2nd medium data consist of the same formats as the above-mentioned 1st medium data.
[0048] Then, in the virtual printer driver 30, for reproducing GDI series of commands from the above-mentioned 2nd medium data, print data are generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305 (step 428).
[0049] If printing directions and print data (GDI series of commands) are received from the virtual printer driver 30 (step 432), a printer driver 40 will start a printer 50 and will output the print data concerned (step 434). Furthermore, a printer 50 carries out the printed output of the print data received from the printer driver 40.
[0050] A printer driver 40 notifies the completion of printing to the virtual printer driver 30 after sending out of the print data to a printer 50. If the above-mentioned advice of the completion of printing is received from a printer driver 40, the virtual printer driver 30 will recognize it as what the processing by the printer driver 40 completed, and will notify the completion of printing to OS (step 429).
[0051] Moreover, it is supervising whether processing of the virtual printer driver 30 completed OS after the above-mentioned code processing service activation, and judges that processing of (step 416) and the virtual printer driver 30 was completed by receiving the above-mentioned advice of the completion of printing from the virtual printer driver 30 during this monitor, and actuation is ended (step 417). Moreover, in that case, to application 10, it notifies that OS processing was completed, and returns to the above-mentioned event monitor loop formation henceforth. On the other hand, in application 10, it supervises whether OS processing was completed after the output of the above-mentioned code data, and (step 405) and a series of printing processings are ended by receiving the above-mentioned advice of the completion of OS processing from OS.
[0052] The virtual printer driver 30 is processing the following (a) - (c) in steps 424-428 so that explanation of processing of a up Norikazu ream may also show.
[0053] (a) The GDI code generates the refreshable 1st medium data from the electronic file which had printing directions from application 10.
[0054] (b) Generate the 2nd medium data of the same format as the 1st medium data concerned by merging this machine-readable sign into the above-mentioned 1st medium data after generating a machine-readable sign from the coded data-ed inputted with the above-mentioned printing directions.
[0055] (c) By reproducing the GDI code train from the 2nd medium data, generate print data and carry out printing directions at a printer driver 40.
[0056] This (a) Since the machine-readable sign set up by the user from the user input section 20 is merged into the print data after processing of - (c), the printed output which the above-mentioned machine-readable sign embedded and was printed by the above-mentioned application data can be obtained by carrying out the printed output of these print data by the printer 50 through a printer driver 40.
[0057] As an example, drawing 7 shows the printing image in the case of embedding and printing a machine-readable sign (this drawing continuous tone part) from each application (10) of a word processor, a spreadsheet, and a drawing tool to each electronic file.
[0058] In the printing processing in this case, first, if a user performs printing of an electronic file

with each above-mentioned application 10, a print dialog as shown in drawing 3 will be displayed. Here, data (coded data-ed) to encode as a machine-readable sign are inputted. Especially, on the dialog in drawing 3 , the example which encodes a "integer" as data type and encodes "1234567890" as a value is shown. If the "O.K." carbon button on a dialog is pushed after inputting coded data-ed Coding of the above-mentioned coded data-ed is performed within the virtual printer driver 30. After this coded data was merged into the 1st medium data and the 2nd medium data were generated, Furthermore, this 2nd medium data turns into print data reproduced by the GDI code train, a printer driver 40 is passed, and the printed output which coded data as shown in drawing 7 by the printer 50 embeds and by which it was printed can be obtained.

[0059] Thus, to the electronic file in it, if it is the application 10 which is equipped with a print facility according to the configuration of this invention which has the virtual printer driver 30 which is arranged between application 10 and a printer driver 40, and performs embedding of a machine-readable sign on refreshable medium data by the GDI code train, also when what kind of printer 50 is used, embedding printing of a machine-readable sign can be performed from all applications, such as a word processor as shown in drawing 7 , a spreadsheet, and a drawing tool.

[0060] In addition, a bar code, data glyph, etc. can be used as a machine-readable sign embedded and printed by this printing system. Moreover, as a content of this machine-readable sign, the registration ID at the time of registering the electronic file for printing into a server can be considered so that it may mention later. In this case, on the output form which embedded and printed the machine-readable sign, the above-mentioned machine-readable sign is read with a scanner, and it scans, and Registration ID is recognized and employment of searching the electronic file corresponding to the registration ID concerned from the above-mentioned server is attained from that reading result.

[0061] As other examples of a machine-readable sign, various information, such as printing time of the identifier of the printed electronic file, the supplying agency host device name of this electronic file, OS name that created this electronic file or a user name, and this electronic file, and pagination, can be considered. Furthermore, it is applicable also to the application of spacing and printing alphabetic characters, such as "important" and a "top secret", to the electronic file printed on the output form (Watermark) etc.

[0062] Moreover, although he is trying to send out to a printer driver 40 in this example after merging a machine-readable sign into the 1st medium data beforehand and generating the 2nd medium data, you may make it send out a machine-readable sign as GDI series of commands instead of this processing in the processing which sends printing directions to a printer driver 40.

[0063] By the way, it is the processing which embedding printing processing of the above-mentioned machine-readable sign does not perform data conversion of the application data itself, but adds and prints additional information, such as the server registration ID, to this application data. In addition, the printing system of this invention can also be considered as the configuration which carries out data conversion of the application data itself, and carries out a printout. As an example of the printing processing accompanied by such data conversion, N-up printing, amplification, or cutback printing can be considered. Moreover, processing of generating a certain file which has an available format by the virtual printer driver 30 is also equivalent to this. What is necessary is just to use the thing (for it to express with sign 303B) possessing the code data analysis section 3031 and the data-conversion section 3034 as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 8 in order to add such a printing processing facility.

[0064] It explains briefly [below] about the printing processing in the printing system which adopts 2nd medium data generation section 303B, and changes in the virtual printer driver 30. In addition, printing processing by the printing system in this case is realizable by permuting by processing which describes processing of step 424 by the virtual printer driver 30 to the step 427 below among the processings which met the flow chart shown in drawing 4 in the printing system which embeds and prints additional information, such as a machine-readable sign.

[0065] Now, in the printing system using 2nd medium data generation section 303B as shown in drawing 8 , after printing directions were made from application 10, N-up printing should be directed on the print dialog (refer to drawing 3). Completion of the setting-out actuation by this

print dialog inputs into the virtual printer driver 30 the printing parameter with which the code data of the electronic file by which printing directions were carried out at this time direct the above-mentioned N-up printing from the user input section 20 again from application 10, respectively.
[0066] In the virtual printer driver 30, if the code data inputted from application 10 are received, first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data, and it stores in the data storage section 304.
[0067] Moreover, in 2nd medium data generation section 303B (refer to drawing 8) of the virtual printer driver 30, while the above-mentioned code data received from application 10 are analyzed in the code data analysis section 3031 and this analysis result is sent out to the data-conversion section 3034, the printing parameter inputted from the user input section 20 is incorporated in the data-conversion section 3034 concerned.
[0068] Then, referring to the analysis result in the code data analysis section 3031, after reading the 1st medium data from the data storage section 304, by changing the above-mentioned 1st medium data into the data for N-up printing according to the printing parameter inputted from the user input section 20, the data-conversion section 3034 generates the 2nd medium data, and stores them in the data storage section 304.
[0069] Furthermore, in the virtual printer driver 30, by reproducing GDI series of commands from the above-mentioned 2nd medium data, ********** is generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305.
[0070] If a printer driver 40 receives printing directions and print data (GDI series of commands) from the virtual printer driver 30, a printer 50 will be started, the print data concerned will be outputted, and a printer 50 will carry out the printed output of the print data received from the printer driver 40 further.
[0071] Drawing 8 shows the example of a printed output based on the above-mentioned printing processing. In this example, when the electronic file of each [these] ** page is usually printed by each output form (two sheets), respectively when 1-up printing is directed for example, to the electronic file which consists of 2 pages, and 2-up printing is directed to the above-mentioned electronic file, the electronic file for above-mentioned 2 pages is printed by the output form of one sheet.
[0072] When using by others, cutback / amplification printing or the virtual printer driver 30 and obtaining a certain data of a sake, even if it faces, it can be coped with by same processing.
[printing / this / N-up]
[0073] In addition, although the example described previously described what carries out independently processing which adds and prints additional information to the application data by which printing directions were carried out, and processing which changes this application data into the data for N-up printing, or a cutback or amplification printing, the system configuration which used these processings together is also possible.
[0074] Next, the gestalt of other operations of this invention is explained. Drawing 10 is the block diagram showing the outline configuration of the printing system concerning the gestalt of other operations of this invention, and gives the same sign to the part which achieves the same function as each part of the printing system shown in drawing 1 .
[0075] In this printing system, the non-printed processing control section 306 which controls processings other than this printing processing is formed in virtual printer driver 30A at the time of printing of an application data by which printing directions were carried out from application 10. This non-printed processing control section 306 is connected with external devices, such as a server 60, through the predetermined interface. Outline actuation of this printing system is explained with reference to the flow chart shown in drawing 11 R> 1. In addition, also in the flow chart shown in this drawing 11 , the same sign is attached about processing by the system shown in drawing 1 , and the same processing.
[0076] In this printing system, when it is going to print the electronic file of arbitration from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting

out of the printing conditions relevant to the electronic file by which the above-mentioned printing directions were made (step 202).
[0077] Moreover, in this printing system, starting directions of non-printed processings other than the printing processing to the electronic file which carried out [above-mentioned] printing directions by the predetermined input function are published, using a dialog (not shown) other than the above-mentioned print dialog (step 203).
[0078] Completion of the above-mentioned printing conditioning actuation and the above-mentioned non-printed processing starting directions actuation inputs into the virtual printer driver 30 printing parameters and coded data-ed, such as N-up printing to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again, from the above-mentioned application 10, respectively. At this time, the above-mentioned non-printed processing starting directions information is also included in the information inputted from the user input section 20.
[0079] In virtual printer driver 30A, in the 1st medium data generation section 302, the 1st medium data are first generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data generation section 303 stored in the data storage section 304 (step 212), and stores them in the data storage section 304.
[0080] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213).
[0081] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the print data (GDI series of commands) sent with the printing directions concerned to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the print data.
[0082] Moreover, after sending out of the printing directions in step 213, by the control section 301 of virtual printer driver 30A, when it confirms whether starting directions of non-printed processing are inputted from the user input section 20 (step 214) and the starting directions concerned are not inputted (step 214 NO), processing is ended. On the other hand, when starting directions of non-printed processing are inputted (step 214 YES), the non-printed processing control section 306 is started, and non-printed processing by which the starting directions concerned are made is performed (step 215).
[0083] In the printing system shown in drawing 10 , in registering the data concerned into a server 60 with printing processing of an application data, in the above-mentioned step 203, it inputs the directions information which means "server registration" as non-printed processing starting directions. At this time, by the control section 301 of virtual printer driver 30A, it recognizes that the starting directions of "the server registration" are carried out based on the directions information concerned in the above-mentioned step 214, and server registration starting is notified to the non-printed processing processing control section 306. By receiving the above-mentioned advice, the non-printed processing control section 306 reads the 2nd medium data stored in the data storage section 304, adds the registration ID specified for example, using the above-mentioned print dialog in the 2nd medium data concerned, and registers it into a server 60.
[0084] In addition, if a mail server and facsimile apparatus are connected as an external device and the control function of these external devices is added to the non-printed processing control section 306, printing the electronic file which corresponds with the printing directions from application 10, e-mail transmission of the electronic file concerned can be carried out through a mail server, or the electronic file concerned is transmitted to facsimile apparatus, and it can respond to various processings of carrying out facsimile transmission at a phase hand.
[0085]
[Effect of the Invention] Since the medium data which can reproduce the print data which suit

printing processing of a printer are generated from the application data by which printing directions were carried out from application, the above-mentioned print data are further reproduced from this medium data and it was made to send out to a printer according to this invention as explained above, the printed output of the data of various applications which have a print facility can be carried out from any printers.

[0086] Moreover, in this invention, since the processing facility which merges a machine-readable sign on the above-mentioned medium data was added, also when embedding and printing a machine-readable sign on an application data, the printed output concerned can be performed, without choosing a printer.

[0087] Moreover, in this invention, since the function which carries out data conversion of the application data by which printing directions were carried out from application on the above-mentioned medium data was added, also when performing N-up, amplification/reduction-printing, etc. to the above-mentioned application data, the printed output concerned can be performed, without choosing a printer.

[0088] Furthermore, in this invention, since the function to perform non-printed processing actuation was added performing print-data creation processing, in parallel to printing processing of an application data, non-printed processing actuation of server registration, facsimile transmission, etc. about this application data can be performed.

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] This invention relates to amelioration of the data-processing approach for performing the printed output of the above-mentioned application data to any printers from all applications with a print facility in detail with respect to the printing system which prints the data by which printing directions were carried out with application by the printer.

[Translation done.]

PRIOR ART

[Description of the Prior Art] In case the electronic file created and edited with application is printed, the system which also embeds the sign (machine-readable sign) in which machine reading is possible together, and prints it with the electronic file concerned is known. In this kind of system, there is a thing using the identification information of an electronic file as the above-mentioned machine-readable sign. In this case, after embedding the above-mentioned machine-readable sign and carrying out the printout of the text file by which printing directions were carried out from application, by reading and scanning this output form with a sign reader (scanner), the above-mentioned machine-readable sign is recognized, it matches with this machine-readable sign, and employment of managing an electronic file is attained.
[0003] The electronic document retrieval system of a publication is known by JP,8-50598,A as an example of the conventional system which has a sign addition print facility aiming at management of such a print file. In case it prints out an electronic document, this system outputs the additional information over the electronic document concerned to a form, simultaneously, is a system which stores an electronic document in a database, and is enabling retrieval of an electronic document by a bar code being used as additional information especially outputted to a form, and reading this bar code.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention] Since the medium data which can reproduce the print data which suit printing processing of a printer are generated from the application data by which printing directions were carried out from application, the above-mentioned print data are further reproduced from this medium data and it was made to send out to a printer according to this invention as explained above, the printed output of the data of various applications which have a print facility can be carried out from any printers.
[0086] Moreover, in this invention, since the processing facility which merges a machine-readable sign on the above-mentioned medium data was added, also when embedding and printing a machine-readable sign on an application data, the printed output concerned can be performed, without choosing a printer.
[0087] Moreover, in this invention, since the function which carries out data conversion of the application data by which printing directions were carried out from application on the above-mentioned medium data was added, also when performing N-up, amplification/reduction-printing, etc. to the above-mentioned application data, the printed output concerned can be performed, without choosing a printer.
[0088] Furthermore, in this invention, since the function to perform non-printed processing actuation was added performing print-data creation processing, in parallel to printing processing of an application data, non-printed processing actuation of server registration, facsimile transmission, etc. about this application data can be performed.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In order to usually perform the printed output of the machine-readable sign to an electronic file using a certain printer in this kind represented by the above-mentioned electronic document retrieval system (JP,8-50598,A) of conventional system, it cannot be overemphasized that the printer driver which may drive this printer, and the application which suits the printer driver concerned are prepared.
[0005] This means that the consideration which can print the electronic file created with a certain application by any printers was not made in this kind of conventional system.
[0006] There was a trouble that construction of a system which the printer used is regulated by the application to be used, reads the machine-readable sign after embedding and printing a machine-readable sign to an electronic file as a result of regulating the application used by the printer used, and searches the electronic file concerned with a system conventionally by this was restricted remarkably.
[0007] Then, the object of this invention is to offer the printing system which can perform the printed output of an application data to any printers from all the applications that have a print facility, and its data-processing approach.
[0008] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when embedding and printing a machine-readable sign on an application data.

[0009] Moreover, another object of this invention is to offer the printing system which can perform the above-mentioned printed output, without choosing a printer from this application, and its data-processing approach, when performing a N-up print etc. to the above-mentioned application data.
[0010] Furthermore, other objects of this invention are to offer the printing system which can perform non-printed processing actuation and its data-processing approach of the application data concerned in parallel to printing processing of the above-mentioned application data.

[Translation done.]

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, invention of claim 1 In the printing system which prints the application data by which printing directions were carried out with application by the printer A 1st medium data origination means to create the 1st medium data from said application data, from said 1st medium data -- this -- it is characterized by providing a 2nd medium data origination means to create the 2nd medium data of the same data format as the 1st medium data, and a print-data creation means to create the print data which can be processed by said printer from said 2nd medium data.
[0012] Invention of claim 2 is characterized by constituting said 2nd medium data origination means by merge means to create said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 1.
[0013] Invention of claim 3 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 2.
[0014] Invention of claim 4 is characterized by constituting said 2nd medium data origination means by data-conversion means to create said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 1.
[0015] Invention of claim 5 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 4.
[0016] Invention of claim 6 carries out providing further a movement-directive means direct non-printed processing actuation other than the printing processing to said application data, and the non-printed processing control means which performs the non-printed processing actuation concerned while performing print-data creation processing by said print-data creation means when there are directions of said non-printed processing actuation with said movement directive means as the description in invention of claim 1.
[0017] Invention of claim 7 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 6.
[0018] while invention of claim 8 creates the 1st medium data from said application data in the data-processing approach of the printing system which prints the application data by which printing directions were carried out with application by the printer -- from said 1st medium data -- this -- after creating the 2nd medium data of the same data format as the 1st medium data, it is characterized by to create the print data which can be processed by said printer from said 2nd medium data.
[0019] Invention of claim 9 is characterized by creating said 2nd medium data by compounding the machine-readable sign in which machine reading is possible to said 1st medium data in invention of claim 8.
[0020] Invention of claim 10 is characterized by the number of said machine-readable signs being any one at least of each information on the identification information of said application data, a

printing day entry, pagination information, providing agency host equipment information, and creation operation system name information in invention of claim 9.
[0021] Invention of claim 11 is characterized by creating said 2nd medium data by changing into the data corresponding to the printing control information to which said 1st medium data is directed along with said printing directions in invention of claim 8.
[0022] Invention of claim 12 is characterized by said printing control information being any one of the control information which directs N-up printing, amplification printing, or cutback printing to said application data in invention of claim 11.
[0023] In invention of claim 8, invention of claim 13 is characterized by performing the non-printed processing actuation concerned, performing creation processing of said print data, when non-printed processing actuation other than the printing processing to said application data is directed selectively and there are directions of this non-printed processing actuation.
[0024] Invention of claim 14 is characterized by being any one of the processing to which said non-printed processing actuation registers said 2nd medium data into a server, the processing which carries out e-mail transmission of said 2nd medium data, and the processing actuation to which facsimile transmission of said 2nd medium data is carried out at least in invention of claim 13.
[0025]
[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the block diagram showing the outline configuration of the printing system concerning the gestalt of 1 operation of this invention. This printing system With the application 10 and application 10 which have data editing and a print facility at least The code data of the electronic file by which printing directions were carried out The machine-readable sign which embeds by (the content of the electronic file) and is printed The printing conditions inputted from the user input section 20 which inputs printing conditions, such as coded data-ed for obtaining and a printing parameter (printer control information) of this electronic file, and the user input section 20 are followed. The print data in which printing processing is possible by the printer 50 from the above-mentioned code data By actuation control of the virtual printer driver 30 to generate, the printer driver 40 which drives a printer 50 based on the print data outputted from this virtual printer driver 30, and this printer driver 40 The printer 50 which carries out the printed output of the above-mentioned print data is provided, and it is constituted.
[0026] The virtual printer driver 30 prepared between application 10 and a printer driver 40 here The above-mentioned printing conditions of being inputted from the 1st medium data generation section 302 which generates the 1st medium data from the above-mentioned code data inputted from application 10, and the user input section 20 are followed. The 2nd medium data of the same data format as the 1st medium data concerned from the above-mentioned 1st medium data The print data which a printer 50 can printing process are generated from the 2nd medium data stored in the data storage section 304 which stores the 2nd medium data generation section 303, the 1st medium data, and the 2nd medium data to generate, and the data storage section 304. The control section 301 which controls in generalization the print-data generation section 305 sent out to a printer driver 40, the above-mentioned 1st medium data generation section 302, the 2nd medium data generation section 303, the data storage section 304, and the print-data generation section 305 is provided, and it is constituted.
[0027] Next, in this printing system, the outline actuation in the case of printing the electronic file by which printing directions were carried out from application 10 is explained with reference to the flow chart shown in drawing 2 .
[0028] In this printing system, when it is going to print the electronic file of the arbitration generated by the application 10 concerned from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions of an electronic file that the above-mentioned printing directions were made (step 202). there be the size of a form besides the coded data-ed for obtain the machine-readable sign embed to the data

of an electronic file with which the printing directions as requirements for a printing condition which can be input be made from the user input section 20 using the above-mentioned print dialog to the printing directions from application 10 (data to encode) and the sense, the propriety of N-up printing or amplification/cutback printing, and various information on margin information so that the example of drawing 3 may also show.
[0029] Completion of setting-out actuation of the printing conditions by this print dialog inputs into the virtual printer driver 30 a printing parameter, coded data-ed, etc. to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again from the above-mentioned application 10, respectively.
[0030] In the virtual printer driver 30, first, by the 1st medium data generation section 302, the 1st medium data are generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. The 1st medium data have the format which can reproduce the GDI (Graphic Device Independent) command in step 213 mentioned later (rendering). As an example of this 1st medium data, various meta files, such as WMF (Windows Meta File) and EMF (Enhanced Meta File), are raised (Windows is the trademark of U.S. Microsoft). In addition, about the 1st medium data, if the requirements that the GDI command is reproducible are satisfied, even if it is the format for which it opted uniquely, it will not interfere.
[0031] On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data stored in the data storage section 304 (step 212), and stores them in the data storage section 304.
[0032] One of the processings of this step 212 has the processing which embeds this machine-readable sign to the 1st medium data after encoding the coded data-ed inputted from the user input section 20 as a machine-readable sign, and generates these 1st medium data and isomorphism-type data (the 2nd medium data). Moreover, there is processing which carries out data conversion of the 1st medium data to the 1st medium data concerned and the data (the 2nd medium data) of business, such as N-up printing of an isomorphism type and amplification/cutback printing, as other one based on the printing parameters (N-up printing, amplification/cutback printing, etc.) inputted from the user input section 20.
[0033] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213). When it consists of WMF(s) and EMF(s) which the 2nd medium data mentioned above about this processing, it can print by Windows API.
[0034] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the above-mentioned print data (GDI series of commands) to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the above-mentioned print data.
[0035] Thus, the printing system of this invention arranges the virtual printer driver 30 (application realizes) between application 10 and a printer driver 40 (on an interface), first generates the medium data which can reproduce the GDI code in this virtual printer driver 30 from the application data by which printing directions were carried out from application 10, by reproducing the GDI code based on this medium data further, generates print data and gives them to a printer driver 40. That is, in the printing system of this invention, the virtual printer driver 30 will hit application, if it sees from an application side and will see from a printer driver 40 side in a printer driver. By making such a virtual printer driver 30 intervene, the printer output of various gestalten, such as embedding printing of a machine reading sign, N-up printing, or amplification/cutback printing, is realizable from all the applications 10 equipped with the print facility to any printers 50.
[0036] Next, the example of the printing processing actuation in this printing system is explained in full detail with reference to the flow chart shown in drawing 4 . Drawing 5 is outline block diagram **** of this printing system used in order to explain the printing processing which met the flow chart shown in this drawing 4 . In addition, especially the flow chart shown in this drawing 4

corresponds to the printing processing in the case of embedding and printing a machine-readable sign from a user to the electronic file by which printing directions were carried out. In this case, as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 6 , the thing (it expresses with sign 303A) possessing the code data analysis section 3031, the embedding data generation section 3032, and the merge-application section 3033 is used.
[0037] As shown in drawing 5 , the virtual printer driver 30 exists between the printer drivers 40 by which this printing system controls application 10 and a printer 50, and, the virtual printer driver 30, application 10, and in between, OS (operating system) intervenes further. Application 10 has the function which displays a printing dialog as shown at the time of printing of the electronic file generated by the application 10 concerned, for example, this drawing upper part. In the printing dialog of this application 10, the print dialog of the user input section 20 opens by choosing a property. It seems that this print dialog is shown in drawing 3 . A user inputs a printing parameter, data (coded data-ed) which it is going to encode of the electronic file which it is going to print from the above-mentioned application 10 using this print dialog.
[0038] In the above-mentioned application 10, while editing a certain electronic file (step 401), the virtual printer driver 30 and printer driver 40 which intervene between this application 10 and printer 50 are in an idle state, respectively. At this time, OS which controls activation of the above-mentioned application 10 is supervising whether a certain event was directed from the above-mentioned application 10 (step 411).
[0039] In this condition, if there are printing directions from the above-mentioned application 10 to the electronic file under above-mentioned edit (step 402), in OS, an event occurs, and it recognizes that that event is printing directions (step 411 YES), and motive directions are sent out to the virtual printer driver 30 (step 412). Thereby, it will be in activation status, and first, the virtual printer driver 30 processes initialization (step 421), subsequently to a printer driver 40 sends out starting directions (step 422), and waits for the advice of the completion of initialization from a printer driver 40 after that (step 423).
[0040] On the other hand, a printer driver 40 returns advice of the completion of initialization to the virtual printer driver 30, after processing initialization with the starting directions from the virtual printer driver 30 (step 431). The virtual printer driver 30 will notify the completion of initialization to OS, if the above-mentioned advice of the completion of initialization is received (step 423 YES).
[0041] If it is, on the other hand, supervising whether there is any advice of the completion of initialization from this virtual printer driver 30 by OS after starting command sending out to the above-mentioned virtual printer driver 30, and advice of the completion of initialization is received from the virtual printer driver 30 in this condition (step 413 YES), advice of a printing preparation completion is sent out to application 10 by recognition that preparation of the virtual printer driver 30 concerned completed (step 414).
[0042] Moreover, in application 10, after emitting printing directions in step 402, it is supervising whether processing of OS was completed, and judges that processing of (step 403YES) and OS was completed by receiving advice of a printing preparation completion from OS, and code data are outputted to the OS (step 404).
[0043] In OS which received this code data, predetermined code processing service is carried out (step 415), and the code data after this service processing are sent out to the virtual printer driver 30.
[0044] As processing of the above-mentioned step 404 -> step 415 mentioned above, a print dialog (the user input section 20) as shown in drawing 3 based on the printing directions from application 10 displays, and it corresponds to the processing which inputs by the user using the above-mentioned print dialog in the printing parameter to the code (encoded code) and the above-mentioned code data which it is going to encode to the content of a text file for [which is inputted from application 10 by the above-mentioned printing directions] printing (code data). The encoded code and printing parameter which are inputted using the code data inputted from these applications 10 or the above-mentioned print dialog are outputted to the virtual printer driver 30 through the above-mentioned code processing service.
[0045] In the virtual printer driver 30, if the code data outputted by processing of the above-

mentioned step 415 in OS are received (step 424), first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data (step 425), and it stores in the data storage section 304.
[0046] Moreover, in 2nd medium data generation section 303A (refer to drawing 6) of the virtual printer driver 30, while the above-mentioned code data received from OS are analyzed in the code data-analysis section 3031 and this analysis result is sent out to the merge-application section 3033, the machine-readable sign which should be embedded to the code data by which printing directions were carried out [above-mentioned] based on the coded data-ed inputted from the user input section 20 in the embedding data generation section 3032 is generated (step 426), and it sends out to the merge-application section 3033.
[0047] Furthermore, after the merge-application section 3033 reads the 1st medium data from the data storage section 304, by merging into the above-mentioned 1st medium data the machine-readable sign generated at the above-mentioned step 426 according to the printing parameter into which it is inputted from the analysis result and the user input section 20 in the code data analysis section 3031, it generates the 2nd medium data (step 427), and stores them in the data storage section 304. Here, the 2nd medium data consist of the same formats as the above-mentioned 1st medium data.
[0048] Then, in the virtual printer driver 30, for reproducing GDI series of commands from the above-mentioned 2nd medium data, print data are generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305 (step 428).
[0049] If printing directions and print data (GDI series of commands) are received from the virtual printer driver 30 (step 432), a printer driver 40 will start a printer 50 and will output the print data concerned (step 434). Furthermore, a printer 50 carries out the printed output of the print data received from the printer driver 40.
[0050] A printer driver 40 notifies the completion of printing to the virtual printer driver 30 after sending out of the print data to a printer 50. If the above-mentioned advice of the completion of printing is received from a printer driver 40, the virtual printer driver 30 will recognize it as what the processing by the printer driver 40 completed, and will notify the completion of printing to OS (step 429).
[0051] Moreover, it is supervising whether processing of the virtual printer driver 30 completed OS after the above-mentioned code processing service activation, and judges that processing of (step 416) and the virtual printer driver 30 was completed by receiving the above-mentioned advice of the completion of printing from the virtual printer driver 30 during this monitor, and actuation is ended (step 417). Moreover, in that case, to application 10, it notifies that OS processing was completed, and returns to the above-mentioned event monitor loop formation henceforth. On the other hand, in application 10, it supervises whether OS processing was completed after the output of the above-mentioned code data, and (step 405) and a series of printing processings are ended by receiving the above-mentioned advice of the completion of OS processing from OS.
[0052] The virtual printer driver 30 is processing the following (a) - (c) in steps 424-428 so that explanation of processing of a up Norikazu ream may also show.
[0053] (a) The GDI code generates the refreshable 1st medium data from the electronic file which had printing directions from application 10.
[0054] (b) Generate the 2nd medium data of the same format as the 1st medium data concerned by merging this machine-readable sign into the above-mentioned 1st medium data after generating a machine-readable sign from the coded data-ed inputted with the above-mentioned printing directions.
[0055] (c) By reproducing the GDI code train from the 2nd medium data, generate print data and carry out printing directions at a printer driver 40.
[0056] This (a) Since the machine-readable sign set up by the user from the user input section 20 is merged into the print data after processing of - (c), the printed output which the above-mentioned machine-readable sign embedded and was printed by the above-mentioned application data can be obtained by carrying out the printed output of these print data by the printer 50 through a printer driver 40.

[0057] As an example, drawing 7 shows the printing image in the case of embedding and printing a machine-readable sign (this drawing continuous tone part) from each application (10) of a word processor, a spreadsheet, and a drawing tool to each electronic file.
[0058] In the printing processing in this case, first, if a user performs printing of an electronic file with each above-mentioned application 10, a print dialog as shown in drawing 3 will be displayed. Here, data (coded data-ed) to encode as a machine-readable sign are inputted. Especially, on the dialog in drawing 3 , the example which encodes a "integer" as data type and encodes "1234567890" as a value is shown. If the "O.K." carbon button on a dialog is pushed after inputting coded data-ed Coding of the above-mentioned coded data-ed is performed within the virtual printer driver 30. After this coded data was merged into the 1st medium data and the 2nd medium data were generated, Furthermore, this 2nd medium data turns into print data reproduced by the GDI code train, a printer driver 40 is passed, and the printed output which coded data as shown in drawing 7 by the printer 50 embeds and by which it was printed can be obtained.
[0059] Thus, to the electronic file in it, if it is the application 10 which is equipped with a print facility according to the configuration of this invention which has the virtual printer driver 30 which is arranged between application 10 and a printer driver 40, and performs embedding of a machine-readable sign on refreshable medium data by the GDI code train, also when what kind of printer 50 is used, embedding printing of a machine-readable sign can be performed from all applications, such as a word processor as shown in drawing 7 , a spreadsheet, and a drawing tool.
[0060] In addition, a bar code, data glyph, etc. can be used as a machine-readable sign embedded and printed by this printing system. Moreover, as a content of this machine-readable sign, the registration ID at the time of registering the electronic file for printing into a server can be considered so that it may mention later. In this case, on the output form which embedded and printed the machine-readable sign, the above-mentioned machine-readable sign is read with a scanner, and it scans, and Registration ID is recognized and employment of searching the electronic file corresponding to the registration ID concerned from the above-mentioned server is attained from that reading result.
[0061] As other examples of a machine-readable sign, various information, such as printing time of the identifier of the printed electronic file, the supplying agency host device name of this electronic file, OS name that created this electronic file or a user name, and this electronic file, and pagination, can be considered. Furthermore, it is applicable also to the application of spacing and printing alphabetic characters, such as "important" and a "top secret", to the electronic file printed on the output form (Watermark) etc.
[0062] Moreover, although he is trying to send out to a printer driver 40 in this example after merging a machine-readable sign into the 1st medium data beforehand and generating the 2nd medium data, you may make it send out a machine-readable sign as GDI series of commands instead of this processing in the processing which sends printing directions to a printer driver 40.
[0063] By the way, it is the processing which embedding printing processing of the above-mentioned machine-readable sign does not perform data conversion of the application data itself, but adds and prints additional information, such as the server registration ID, to this application data. In addition, the printing system of this invention can also be considered as the configuration which carries out data conversion of the application data itself, and carries out a printout. As an example of the printing processing accompanied by such data conversion, N-up printing, amplification, or cutback printing can be considered. Moreover, processing of generating a certain file which has an available format by the virtual printer driver 30 is also equivalent to this. What is necessary is just to use the thing (for it to express with sign 303B) possessing the code data analysis section 3031 and the data-conversion section 3034 as the 2nd medium data generation section 303 in the virtual printer driver 30, as shown in drawing 8 in order to add such a printing processing facility.
[0064] It explains briefly [below] about the printing processing in the printing system which adopts 2nd medium data generation section 303B, and changes in the virtual printer driver 30. In addition, printing processing by the printing system in this case is realizable by permuting by processing which describes processing of step 424 by the virtual printer driver 30 to the step 427 below among the processings which met the flow chart shown in drawing 4 in the printing system

which embeds and prints additional information, such as a machine-readable sign.
[0065] Now, in the printing system using 2nd medium data generation section 303B as shown in drawing 8 , after printing directions were made from application 10, N-up printing should be directed on the print dialog (refer to drawing 3). Completion of the setting-out actuation by this print dialog inputs into the virtual printer driver 30 the printing parameter with which the code data of the electronic file by which printing directions were carried out at this time direct the above-mentioned N-up printing from the user input section 20 again from application 10, respectively.
[0066] In the virtual printer driver 30, if the code data inputted from application 10 are received, first, by the 1st medium data generation section 302, the 1st medium data which change by format reproducible in the GDI code in subsequent processing are created based on the received code data, and it stores in the data storage section 304.
[0067] Moreover, in 2nd medium data generation section 303B (refer to drawing 8) of the virtual printer driver 30, while the above-mentioned code data received from application 10 are analyzed in the code data analysis section 3031 and this analysis result is sent out to the data-conversion section 3034, the printing parameter inputted from the user input section 20 is incorporated in the data-conversion section 3034 concerned.
[0068] Then, referring to the analysis result in the code data analysis section 3031, after reading the 1st medium data from the data storage section 304, by changing the above-mentioned 1st medium data into the data for N-up printing according to the printing parameter inputted from the user input section 20, the data-conversion section 3034 generates the 2nd medium data, and stores them in the data storage section 304.
[0069] Furthermore, in the virtual printer driver 30, by reproducing GDI series of commands from the above-mentioned 2nd medium data, ********** is generated and these print data are sent out to a printer driver 40 with printing directions by the print-data generation section 305.
[0070] If a printer driver 40 receives printing directions and print data (GDI series of commands) from the virtual printer driver 30, a printer 50 will be started, the print data concerned will be outputted, and a printer 50 will carry out the printed output of the print data received from the printer driver 40 further.
[0071] Drawing 8 shows the example of a printed output based on the above-mentioned printing processing. In this example, when the electronic file of each [these] ** page is usually printed by each output form (two sheets), respectively when 1-up printing is directed for example, to the electronic file which consists of 2 pages, and 2-up printing is directed to the above-mentioned electronic file, the electronic file for above-mentioned 2 pages is printed by the output form of one sheet.
[0072] When using by others, cutback / amplification printing or the virtual printer driver 30 and obtaining a certain data of a sake, even if it faces, it can be coped with by same processing.
[printing / this / N-up]
[0073] In addition, although the example described previously described what carries out independently processing which adds and prints additional information to the application data by which printing directions were carried out, and processing which changes this application data into the data for N-up printing, or a cutback or amplification printing, the system configuration which used these processings together is also possible.
[0074] Next, the gestalt of other operations of this invention is explained. Drawing 10 is the block diagram showing the outline configuration of the printing system concerning the gestalt of other operations of this invention, and gives the same sign to the part which achieves the same function as each part of the printing system shown in drawing 1 .
[0075] In this printing system, the non-printed processing control section 306 which controls processings other than this printing processing is formed in virtual printer driver 30A at the time of printing of an application data by which printing directions were carried out from application 10. This non-printed processing control section 306 is connected with external devices, such as a server 60, through the predetermined interface. Outline actuation of this printing system is explained with reference to the flow chart shown in drawing 11 R> 1. In addition, also in the flow chart shown in this drawing 11 , the same sign is attached about processing by the system shown in drawing 1 , and the same processing.

[0076] In this printing system, when it is going to print the electronic file of arbitration from application 10, a user publishes the printing directions to that electronic file that it is going to print (step 201). By publishing these printing directions, in the user input section 20, a print dialog as shown, for example in drawing 3 is displayed, and it shifts to the processing which receives setting out of the printing conditions relevant to the electronic file by which the above-mentioned printing directions were made (step 202).
[0077] Moreover, in this printing system, starting directions of non-printed processings other than the printing processing to the electronic file which carried out [above-mentioned] printing directions by the predetermined input function are published, using a dialog (not shown) other than the above-mentioned print dialog (step 203).
[0078] Completion of the above-mentioned printing conditioning actuation and the above-mentioned non-printed processing starting directions actuation inputs into the virtual printer driver 30 printing parameters and coded data-ed, such as N-up printing to which the code data of an electronic file with which the above-mentioned printing directions were made were set by the user from the above-mentioned user input section 20 again, from the above-mentioned application 10, respectively. At this time, the above-mentioned non-printed processing starting directions information is also included in the information inputted from the user input section 20.
[0079] In virtual printer driver 30A, in the 1st medium data generation section 302, the 1st medium data are first generated from the above-mentioned code data sent from application 10 (step 211), and it stores in the data storage section 304. On the other hand, the above-mentioned printing condition information which the user set up is inputted into the 2nd medium data generation section 303 from the user input section 20. The 2nd medium data generation section 303 generates the 2nd medium data according to the above-mentioned printing conditions from the 1st medium data generation section 303 stored in the data storage section 304 (step 212), and stores them in the data storage section 304.
[0080] Next, the print-data generation section 305 reproduces GDI series of commands from the data stored in the 2nd medium data in the data storage section 304, and sends it out to a printer driver 40 with those printing directions by using this GDI series of commands as print data (step 213).
[0081] A printer driver 40 starts a printer 50 with the printing directions sent from the print-data generation section 305, and outputs the print data (GDI series of commands) sent with the printing directions concerned to a printer 50 (step 221). Furthermore, a printer 50 carries out the printed output of the print data.
[0082] Moreover, after sending out of the printing directions in step 213, by the control section 301 of virtual printer driver 30A, when it confirms whether starting directions of non-printed processing are inputted from the user input section 20 (step 214) and the starting directions concerned are not inputted (step 214 NO), processing is ended. On the other hand, when starting directions of non-printed processing are inputted (step 214 YES), the non-printed processing control section 306 is started, and non-printed processing by which the starting directions concerned are made is performed (step 215).
[0083] In the printing system shown in drawing 10 , in registering the data concerned into a server 60 with printing processing of an application data, in the above-mentioned step 203, it inputs the directions information which means "server registration" as non-printed processing starting directions. At this time, by the control section 301 of virtual printer driver 30A, it recognizes that the starting directions of "the server registration" are carried out based on the directions information concerned in the above-mentioned step 214, and server registration starting is notified to the non-printed processing processing control section 306. By receiving the above-mentioned advice, the non-printed processing control section 306 reads the 2nd medium data stored in the data storage section 304, adds the registration ID specified for example, using the above-mentioned print dialog in the 2nd medium data concerned, and registers it into a server 60.
[0084] In addition, if a mail server and facsimile apparatus are connected as an external device and the control function of these external devices is added to the non-printed processing control section 306, printing the electronic file which corresponds with the printing directions from application 10, e-mail transmission of the electronic file concerned can be carried out through a

mail server, or the electronic file concerned is transmitted to facsimile apparatus, and it can respond to various processings of carrying out facsimile transmission at a phase hand.
[0085]

[Translation done.]

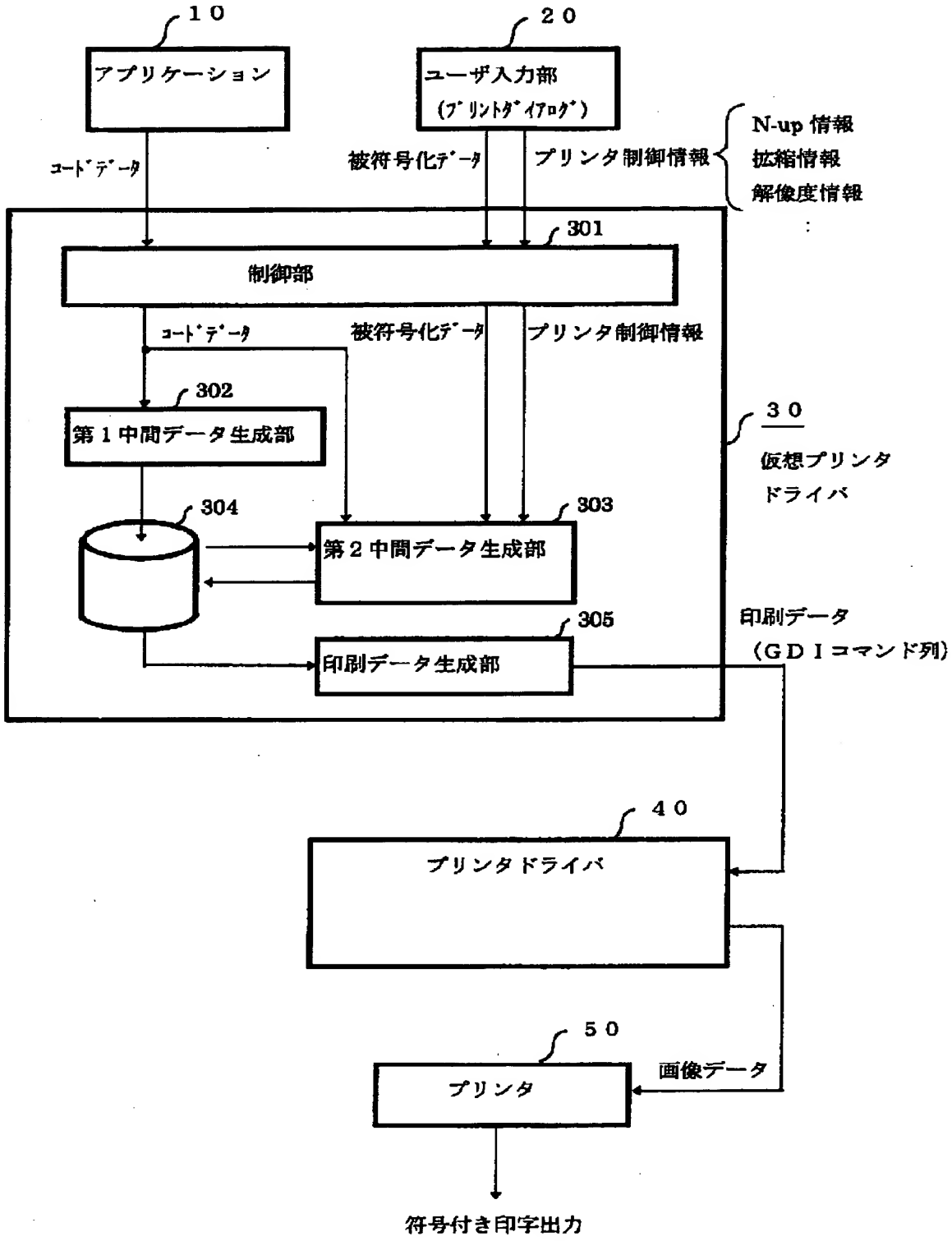
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The outline block diagram of the printing system concerning the gestalt of 1 operation of this invention.
[Drawing 2] The flow chart which shows printing processing actuation of the printing system in drawing 1 .
[Drawing 3] Drawing showing an example of the print dialog used for setting out of printing conditions.
[Drawing 4] The flow chart which shows processing actuation of the whole system at the time of sign embedding printing.
[Drawing 5] The outline block diagram of this printing system used in order to explain the processing actuation shown in drawing 4 .
[Drawing 6] Drawing showing the configuration of the 2nd medium data generation section which is adapted for sign embedding printing.
[Drawing 7] Drawing showing the printed output image at the time of sign embedding printing.
[Drawing 8] Drawing showing the configuration of the 2nd medium data generation section which is adapted for the printing processing accompanied by data conversion.
[Drawing 9] Drawing showing the example of a printed output at the time of the printing processing accompanied by data conversion.
[Drawing 10] The outline block diagram of the printing system concerning the gestalt of other operations of this invention.
[Drawing 11] The flow chart which shows printing processing actuation of the printing system in drawing 10 .
[Description of Notations]
10 -- Application, 20 -- User input section (print dialog), 30 30A -- A virtual printer driver, 301 -- A control section, 302 -- The 1st medium data generation section, 303,303A, 303B -- The 2nd medium data generation section, 3031 -- Code data analysis section, 3032 [-- The data storage section, 305 / -- The print-data generation section, 306 / -- A non-printed processing control section, 40 / -- A printer driver, 50 / -- A printer, 60 / -- Server] -- The embedding data generation section, 3033 -- The merge-application section, 3034 -- The data-conversion section, 304

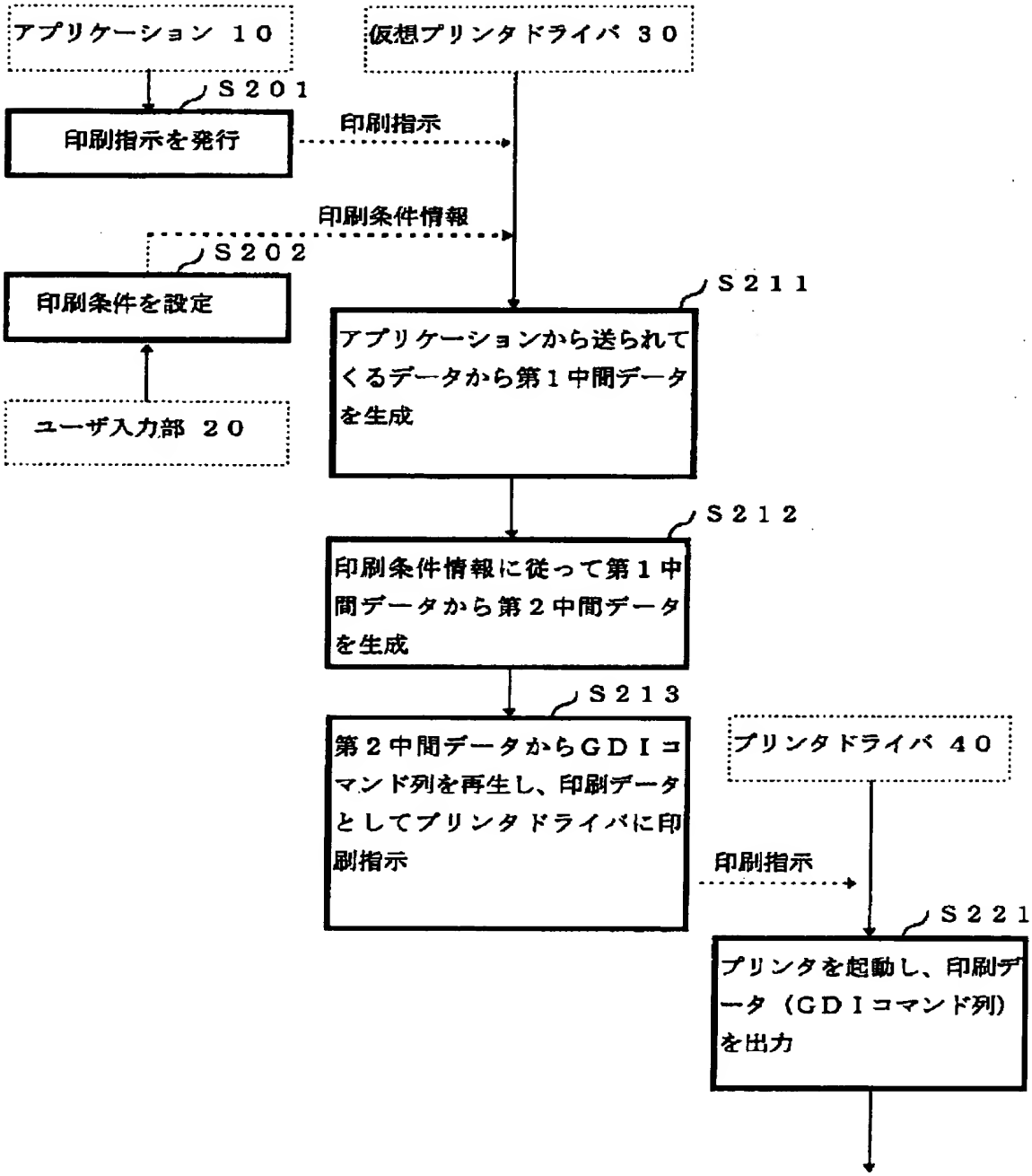
[Translation done.]

DRAWINGS

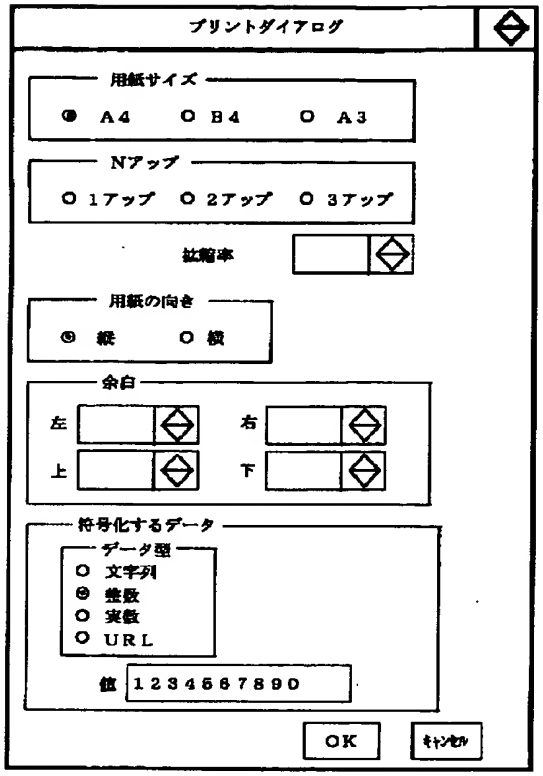
[Drawing 1]


10
アプリケーション
20
ユーザ入力部
(ﾌﾟﾘﾝﾄﾀﾞｲｱﾛｸﾞ)
N-up 情報
拡縮情報
解像度情報
ｺｰﾄﾞﾃﾞｰﾀ
被符号化ﾃﾞｰﾀ
プリンタ制御情報
301
制御部
ｺｰﾄﾞﾃﾞｰﾀ
被符号化ﾃﾞｰﾀ
プリンタ制御情報
302
第1中間データ生成部
30
仮想プリンタ
ドライバ
304
303
第2中間データ生成部
305
印刷データ生成部
印刷データ
(GDIコマンド列)
40
プリンタドライバ
50
プリンタ
画像データ
符号付き印字出力

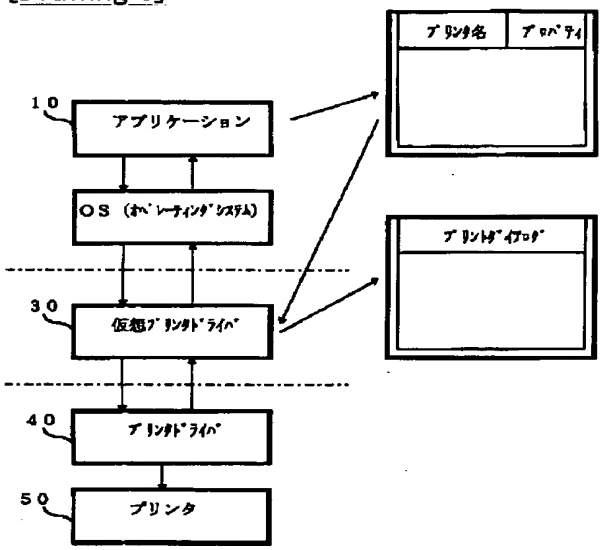
[Drawing 2]


アプリケーション １０
仮想プリンタドライバ ３０
Ｓ２０１
印刷指示を発行
印刷指示
印刷条件情報
Ｓ２０２
印刷条件を設定
ユーザ入力部 ２０
Ｓ２１１
アプリケーションから送られてくるデータから第１中間データを生成
Ｓ２１２
印刷条件情報に従って第１中間データから第２中間データを生成
Ｓ２１３
第２中間データからＧＤＩコマンド列を再生し、印刷データとしてプリンタドライバに印刷指示
プリンタドライバ ４０
印刷指示
Ｓ２２１
プリンタを起動し、印刷データ（ＧＤＩコマンド列）を出力

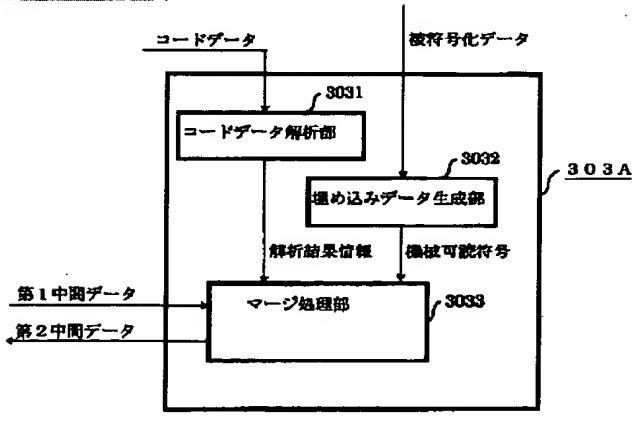
[Drawing 3]



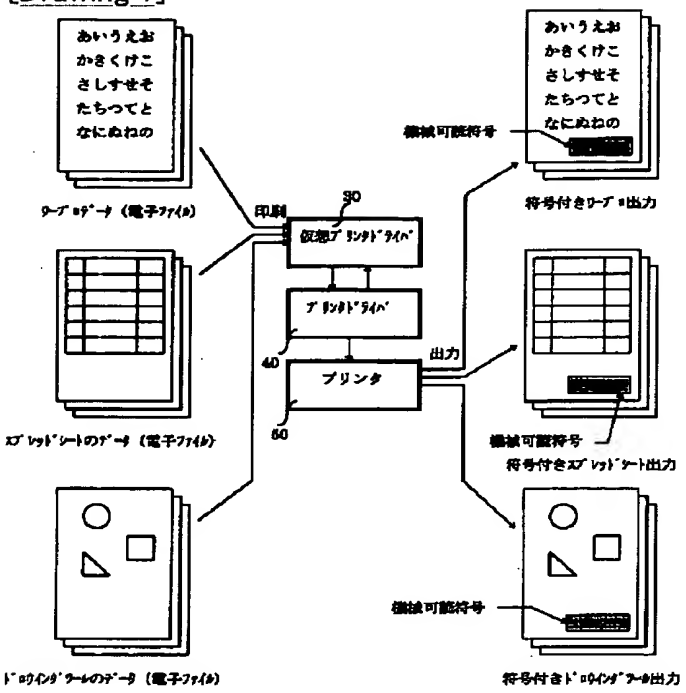
[Drawing 5]



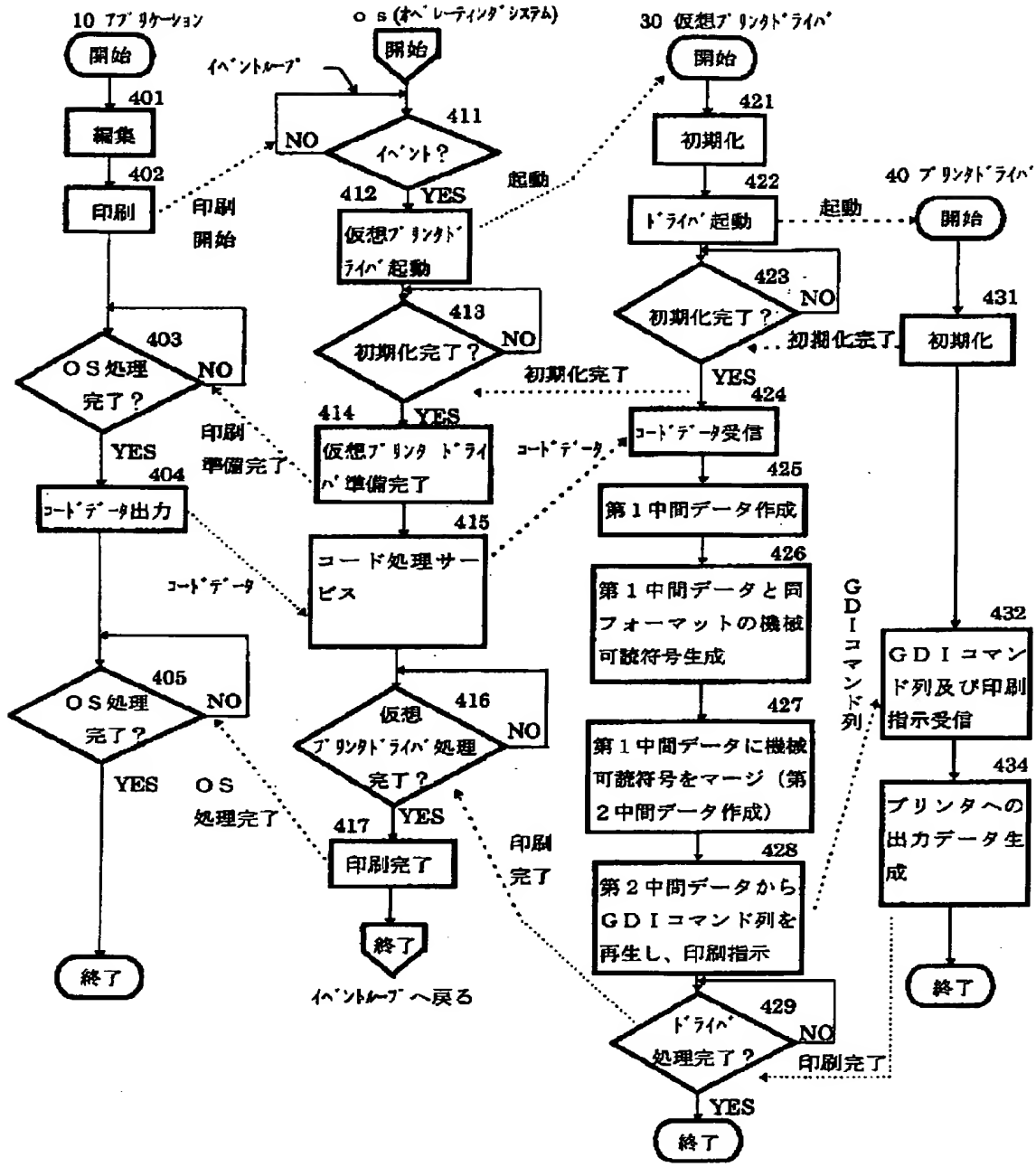
[Drawing 6]



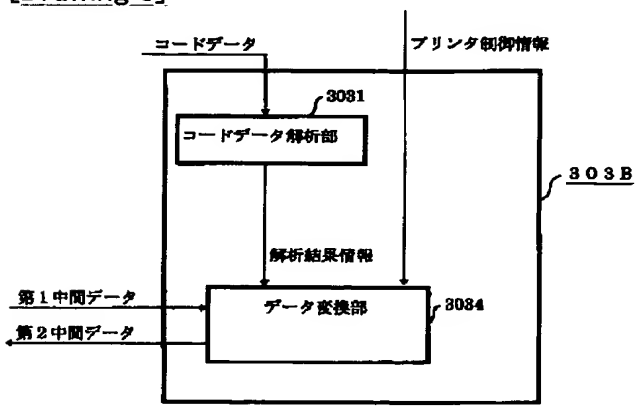
[Drawing 7]



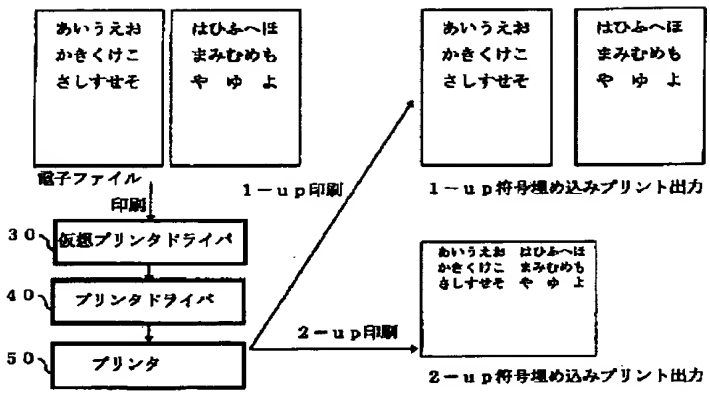
[Drawing 4]



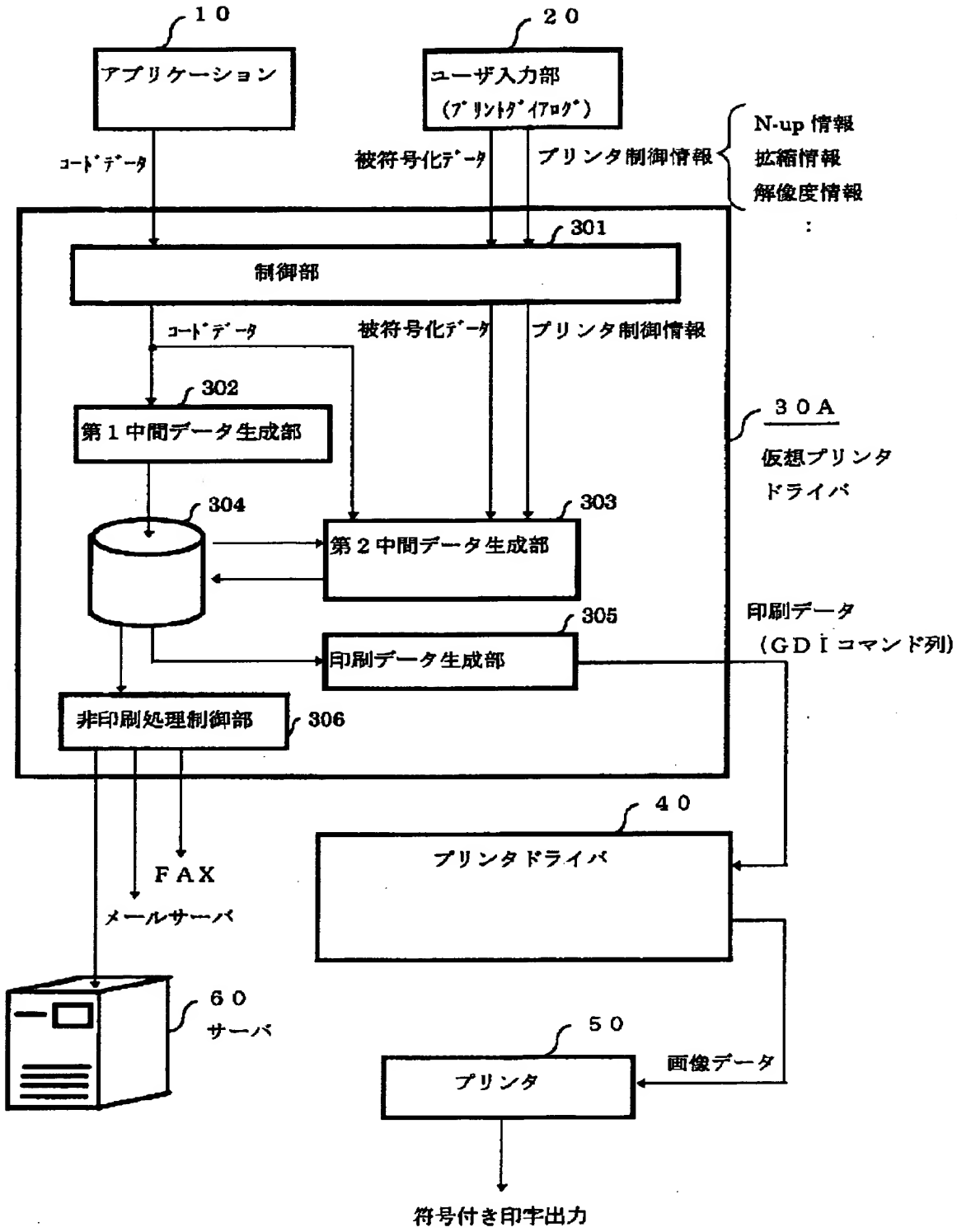
[Drawing 8]



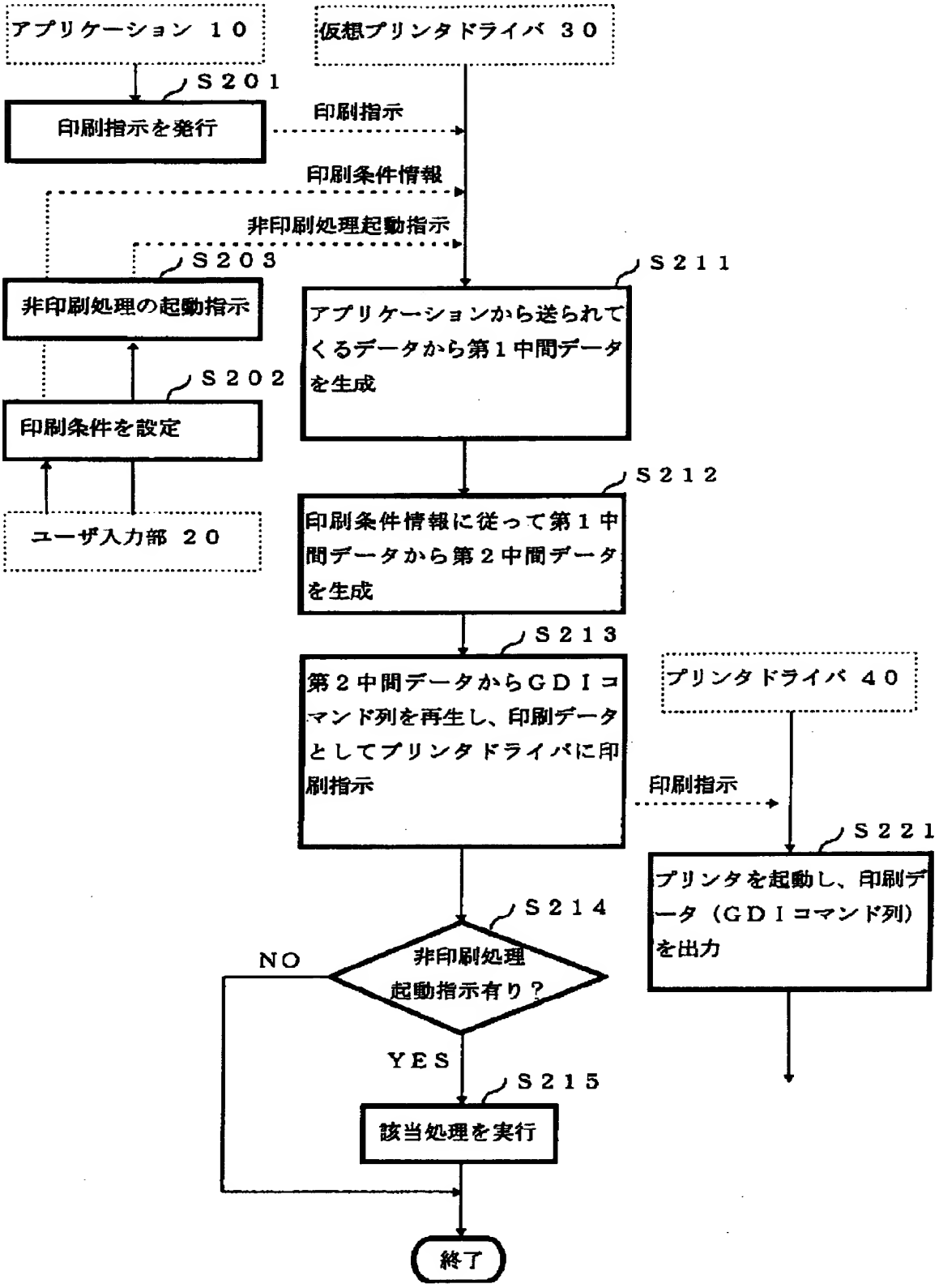
[Drawing 9]


あいうえお
かきくけこ
さしすせそ
はひふへほ
まみむめも
や ゆ よ
電子ファイル
印刷
30
仮想プリンタドライバ
40
プリンタドライバ
50
プリンタ
1－up印刷
2－up印刷
あいうえお
かきくけこ
さしすせそ
はひふへほ
まみむめも
や ゆ よ
1－up符号埋め込みプリント出力
2－up符号埋め込みプリント出力

[Drawing 10]


10
アプリケーション
20
ユーザ入力部
(プリントダイアログ)
コードデータ
被符号化データ
プリンタ制御情報
N-up 情報
拡縮情報
解像度情報
:
301
制御部
コードデータ
被符号化データ
プリンタ制御情報
302
第1中間データ生成部
30A
仮想プリンタ
ドライバ
304
303
第2中間データ生成部
305
印刷データ
(GDIコマンド列)
印刷データ生成部
非印刷処理制御部
306
40
プリンタドライバ
FAX
メールサーバ
60
サーバ
50
画像データ
プリンタ
符号付き印字出力

[Drawing 11]



[Translation done.]

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Ｂ４１Ｊ　21/00		Ｂ４１Ｊ　21/00	Ｚ

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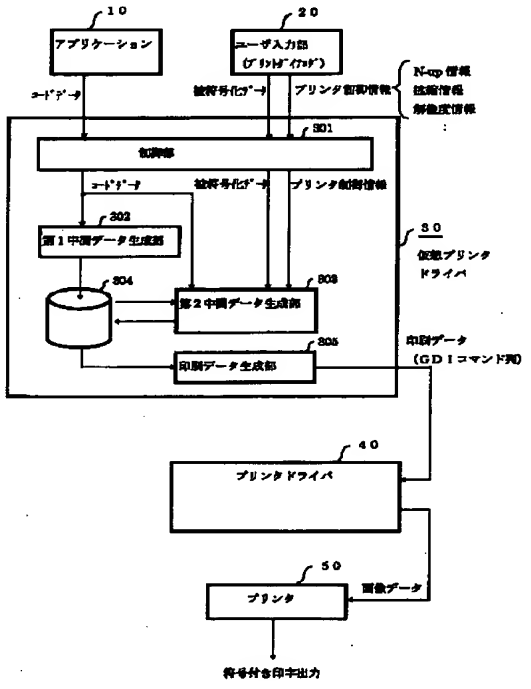
(54)【発明の名称】　印刷システム及びそのデータ処理方法

(57)【要約】

【課題】　様々なアプリケーションのデータをいかなるプリンタからもプリント出力できる印刷システム及びそのデータ処理方法を提供する。

【解決手段】　アプリケーション１０とプリンタドライバ４０との間に仮想プリンタドライバ３０を配置する。仮想プリンタドライバ３０において、第１中間データ生成部３０２は、アプリケーション１０より印刷指示されたアプリケーションデータからＧＤＩコードを再現可能な第１中間データを生成し、第２中間データ生成部３０３は、上記第１中間データに機械可読符号を埋め込むことにより第２中間データを生成する。更に、印刷データ生成部３０５は、第２中間データからＧＤＩコードを再生することにより印刷データを生成し、プリンタドライバ４０に送出する。



1

【特許請求の範囲】
【請求項１】　アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムにおいて、
前記アプリケーションデータから第１の中間データを作成する第１中間データ作成手段と、
前記第１の中間データから該第１の中間データと同じデータ形式の第２の中間データを作成する第２中間データ作成手段と、
前記第２の中間データから前記プリンタで処理可能な印刷データを作成する印刷データ作成手段とを具備することを特徴とする印刷システム。
【請求項２】　前記第２中間データ作成手段は、前記第１の中間データに機械読み取り可能な機械可読符号を合成することにより前記第２の中間データを作成するデータ合成手段により構成されることを特徴とする請求項１記載の印刷システム。
【請求項３】　前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか１つであることを特徴とする請求項２記載の印刷システム。
【請求項４】　前記第２中間データ作成手段は、前記第１の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより前記第２の中間データを作成するデータ変換手段により構成されることを特徴とする請求項１記載の印刷システム。
【請求項５】　前記印刷制御情報は、前記アプリケーションデータに対するＮ－ｕｐ印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか１つであることを特徴とする請求項４記載の印刷システム。
【請求項６】　前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を指示する動作指示手段と、
前記動作指示手段により前記非印刷処理動作の指示があった場合、前記印刷データ作成手段による印刷データ作成処理を行いながら当該非印刷処理動作を実行する非印刷処理制御手段を更に具備することを特徴とする請求項１記載の印刷システム。
【請求項７】　前記非印刷処理動作は、前記第２中間データをサーバに登録する処理、前記第２中間データをメール送信する処理、前記第２中間データをファクシミリ送信する処理動作のうちの少なくともいずれか１つであることを特徴とする請求項６記載の印刷システム。
【請求項８】　アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムのデータ処理方法において、
前記アプリケーションデータから第１の中間データを作成するとともに、
前記第１の中間データから該第１の中間データと同じデータ形式の第２の中間データを作成した後、
前記第２の中間データから前記プリンタで処理可能な印刷データを作成することを特徴とする印刷システムのデータ処理方法。

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【請求項９】　前記第２の中間データは、前記第１の中間データに機械読み取り可能な機械可読符号を合成することにより作成することを特徴とする請求項８記載の印刷システムのデータ処理方法。
【請求項１０】　前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか１つであることを特徴とする請求項９記載の印刷システムのデータ処理方法。
【請求項１１】　前記第２の中間データは、前記第１の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより作成することを特徴とする請求項８記載の印刷システムのデータ処理方法。
【請求項１２】　前記印刷制御情報は、前記アプリケーションデータに対するＮ－ｕｐ印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか１つであることを特徴とする請求項１１記載の印刷システムのデータ処理方法。
【請求項１３】　前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を選択的に指示し、該非印刷処理動作の指示があった場合、前記印刷データの作成処理を行いながら当該非印刷処理動作を実行することを特徴とする請求項８記載の印刷システムのデータ処理方法。
【請求項１４】　前記非印刷処理動作は、前記第２中間データをサーバに登録する処理、前記第２中間データをメール送信する処理、前記第２中間データをファクシミリ送信する処理動作のうちの少なくともいずれか１つであることを特徴とする請求項１３記載の印刷システムのデータ処理方法。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、アプリケーションにより印刷指示されたデータをプリンタにより印刷する印刷システムに係わり、詳しくは、印刷機能を持つ全てのアプリケーションから、いかなるプリンタに対しても上記アプリケーションデータのプリント出力が行えるようにするためのデータ処理方法の改良に関する。
【０００２】
【従来の技術】アプリケーションにより作成、編集した電子ファイルを印刷する際、当該電子ファイルと共に機械読み取り可能な符号（機械可読符号）も一緒に埋め込み印刷するシステムが知られている。この種のシステムにおいて、上記機械可読符号として、例えば電子ファイ

ルの識別情報を用いるものがある。この場合、アプリケーションから印刷指示された文書ファイルを上記機械可読符号を埋め込んで印刷出力した後、この出力用紙を符号読み取り装置（スキャナ）で読み取り走査することにより上記機械可読符号を認識し、該機械可読符号に対応付けて電子ファイルを管理する等の運用が可能となる。

【０００３】こうした印刷ファイルの管理を目的とする符号付加印刷機能を有する従来のシステムの一例として、特開平8-50598号公報に記載の電子書類検索システムが知られている。このシステムは、電子書類をプリントアウトする際、当該電子書類に対する付加情報を用紙に出力し、同時に、データベースへ電子書類を格納するシステムであり、特に、用紙に出力する付加情報としてはバーコードを用いられ、このバーコードを読み取ることで電子書類を検索可能としている。

【０００４】

【発明が解決しようとする課題】上記電子書類検索システム（特開平8-50598号公報）に代表されるこの種の従来システムでは、通常、あるプリンタを用いて電子ファイルに対する機械可読符号のプリント出力を行うためには、このプリンタを駆動し得るプリンタドライバと、当該プリンタドライバに適合するアプリケーションが用意されることは言うまでもない。

【０００５】このことは、この種の従来システムにおいては、あるアプリケーションで作成した電子ファイルをいかなるプリンタによっても印刷できるような配慮がなされていなかったことを意味する。

【０００６】これにより、従来システムでは、用いるアプリケーションによって使用プリンタが規制され、使用プリンタによって用いるアプリケーションが規制される結果、例えば電子ファイルに機械可読符号を埋め込んで印刷した後、その機械可読符号を読み取って当該電子ファイルの検索を行うようなシステムの構築が著しく制限されるという問題点があった。

【０００７】そこで、本発明の目的は、印刷機能を有する全てのアプリケーションからいかなるプリンタに対してもアプリケーションデータのプリント出力を行うことができる印刷システム及びそのデータ処理方法を提供することにある。

【０００８】また、本発明の別の目的は、アプリケーションデータに機械可読符号を埋め込んでプリントする場合においても、このアプリケーションからプリンタを選ばずに上記プリント出力が行える印刷システム及びそのデータ処理方法を提供することにある。

【０００９】また、本発明の別の目的は、上記アプリケーションデータに対してＮ－ｕｐプリント等を行う場合においても、このアプリケーションからプリンタを選ばずに上記プリント出力が行える印刷システム及びそのデータ処理方法を提供することにある。

【００１０】更に、本発明の他の目的は、上記アプリケーションデータの印刷処理と並行して当該アプリケーションデータの非印刷処理動作を実行可能な印刷システム及びそのデータ処理方法を提供することにある。

【００１１】

【課題を解決するための手段】上記目的を達成するために、請求項１の発明は、アプリケーションにより印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムにおいて、前記アプリケーションデータから第１の中間データを作成する第１中間データ作成手段と、前記第１の中間データから該第１の中間データと同じデータ形式の第２の中間データを作成する第２中間データ作成手段と、前記第２の中間データから前記プリンタで処理可能な印刷データを作成する印刷データ作成手段とを具備することを特徴とする。

【００１２】請求項２の発明は、請求項１の発明において、前記第２中間データ作成手段は、前記第１の中間データに機械読み取り可能な機械可読符号を合成することにより前記第２の中間データを作成するデータ合成手段により構成されることを特徴とする。

【００１３】請求項３の発明は、請求項２の発明において、前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか１つであることを特徴とする。

【００１４】請求項４の発明は、請求項１の発明において、前記第２中間データ作成手段は、前記第１の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより前記第２の中間データを作成するデータ変換手段により構成されることを特徴とする。

【００１５】請求項５の発明は、請求項４の発明において、前記印刷制御情報は、前記アプリケーションデータに対するＮ－ｕｐ印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか１つであることを特徴とする。

【００１６】請求項６の発明は、請求項１の発明において、前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を指示する動作指示手段と、前記動作指示手段により前記非印刷処理動作の指示があった場合、前記印刷データ作成手段による印刷データ作成処理を行いながら当該非印刷処理動作を実行する非印刷処理制御手段を更に具備することを特徴とする。

【００１７】請求項７の発明は、請求項６の発明において、前記非印刷処理動作は、前記第２中間データをサーバに登録する処理、前記第２中間データをメール送信する処理、前記第２中間データをファクシミリ送信する処理動作のうちの少なくともいずれか１つであることを特徴とする。

【００１８】請求項８の発明は、アプリケーションによ

り印刷指示されたアプリケーションデータをプリンタにより印刷する印刷システムのデータ処理方法において、前記アプリケーションデータから第１の中間データを作成するとともに、前記第１の中間データから該第１の中間データと同じデータ形式の第２の中間データを作成した後、前記第２の中間データから前記プリンタで処理可能な印刷データを作成することを特徴とする。

【００１９】請求項９の発明は、請求項８の発明において、前記第２の中間データは、前記第１の中間データに機械読み取り可能な機械可読符号を合成することにより作成することを特徴とする。

【００２０】請求項１０の発明は、請求項９の発明において、前記機械可読符号は、前記アプリケーションデータの識別情報、印刷日付情報、ページ数情報、提供元ホスト装置情報、作成オペレーションシステム名情報の各情報のうちの少なくともいずれか１つであることを特徴とする。

【００２１】請求項１１の発明は、請求項８の発明において、前記第２の中間データは、前記第１の中間データを前記印刷指示に付随して指示される印刷制御情報に対応したデータに変換することにより作成することを特徴とする。

【００２２】請求項１２の発明は、請求項１１の発明において、前記印刷制御情報は、前記アプリケーションデータに対するＮ－ｕｐ印刷または拡大印刷若しくは縮小印刷を指示する制御情報のうちのいずれか１つであることを特徴とする。

【００２３】請求項１３の発明は、請求項８の発明において、前記アプリケーションデータに対する印刷処理以外の非印刷処理動作を選択的に指示し、該非印刷処理動作の指示があった場合、前記印刷データの作成処理を行いながら当該非印刷処理動作を実行することを特徴とする。

【００２４】請求項１４の発明は、請求項１３の発明において、前記非印刷処理動作は、前記第２中間データをサーバに登録する処理、前記第２中間データをメール送信する処理、前記第２中間データをファクシミリ送信する処理動作のうちの少なくともいずれか１つであることを特徴とする。

【００２５】

【発明の実施の形態】以下、本発明の一実施の形態を添付図面を参照して詳細に説明する。図１は、本発明の一実施の形態に係わる印刷システムの概略構成を示すブロック図である。この印刷システムは、少なくともデータ編集及び印刷機能を有するアプリケーション１０、アプリケーション１０により印刷指示された電子ファイルのコードデータ（電子ファイルの内容）に埋め込んで印刷する機械可読符号を得るための被符号化データ及び該電子ファイルの印刷パラメータ（プリンタ制御情報）等の印刷条件を入力するユーザ入力部２０、ユーザ入力部２

０から入力される印刷条件に従って上記コードデータからプリンタ５０で印刷処理可能な印刷データを生成する仮想プリンタドライバ３０、この仮想プリンタドライバ３０から出力される印刷データに基づきプリンタ５０を駆動するプリンタドライバ４０、該プリンタドライバ４０の駆動制御により上記印刷データをプリント出力するプリンタ５０を具備して構成される。

【００２６】ここで、アプリケーション１０とプリンタドライバ４０間に設けられる仮想プリンタドライバ３０は、アプリケーション１０から入力される上記コードデータから第１の中間データを生成する第１中間データ生成部３０２、ユーザ入力部２０から入力される上記印刷条件に従って上記第１中間データから当該第１中間データと同じデータ形式の第２中間データを生成する第２中間データ生成部３０３、第１中間データ及び第２中間データを格納するデータ格納部３０４、データ格納部３０４に格納されている第２中間データからプリンタ５０が印刷処理可能な印刷データを生成してプリンタドライバ４０に送出する印刷データ生成部３０５、上記第１中間データ生成部３０２，第２中間データ生成部３０３，データ格納部３０４，印刷データ生成部３０５を統括的に制御する制御部３０１を具備して構成される。

【００２７】次に、この印刷システムにおいて、アプリケーション１０から印刷指示された電子ファイルを印刷する場合の概略動作について図２に示すフローチャートを参照して説明する。

【００２８】この印刷システムにおいて、アプリケーション１０から当該アプリケーション１０により生成された任意の電子ファイルを印刷しようとする場合、ユーザがその印刷しようとする電子ファイルに対する印刷指示を発行する（ステップ２０１）。この印刷指示が発行されることにより、ユーザ入力部２０では、例えば図３に示すようなプリントダイアログを表示し、上記印刷指示のなされた電子ファイルの印刷条件の設定を受け付ける処理に移行する（ステップ２０２）。図３の例からも分かるように、アプリケーション１０からの印刷指示に対してユーザ入力部２０から上記プリントダイアログを用いて入力可能な印刷条件要件としては、印刷指示のなされた電子ファイルのデータに埋め込む機械可読符号を得るための被符号化データ（符号化するデータ）の他、用紙のサイズ及び向き、Ｎ－ｕｐ印刷や拡大／縮小印刷の可否、マージン情報の各種情報がある。

【００２９】このプリントダイアログによる印刷条件の設定操作が完了すると、上記アプリケーション１０からは上記印刷指示のなされた電子ファイルのコードデータが、また上記ユーザ入力部２０からはユーザにより設定された印刷パラメータや被符号化データ等がそれぞれ仮想プリンタドライバ３０に入力される。

【００３０】仮想プリンタドライバ３０では、まず、第１中間データ生成部３０２により、アプリケーション１

０から送られてくる上記コードデータから第１中間データを生成し（ステップ２１１）、データ格納部３０４に格納する。第１中間データは、後述するステップ２１３においてＧＤＩ（Graphic Device Independent）コマンドを再生（再現）できるフォーマットを有するものである。この第１中間データの例としては、WMF（Windows Meta File）やEMF（Enhanced Meta File）等の各種メタファイルがあげられる（Windowsは、米Microsoft社の登録商標）。この他、第１中間データについては、ＧＤＩコマンドを再生できるという要件を満たすものであれば、独自に決定したフォーマットであっても差し支えない。

【００３１】一方、ユーザが設定した上記印刷条件情報は、ユーザ入力部２０から第２中間データ生成部３０３に入力される。第２中間データ生成部３０３は、データ格納部３０４に格納されている第１中間データから上記印刷条件に従って第２中間データを生成し（ステップ２１２）、データ格納部３０４に格納する。

【００３２】このステップ２１２の処理の１つには、ユーザ入力部２０から入力された被符号化データを機械可読符号として符号化したうえでこの機械可読符号を第１中間データに埋め込んで該第１中間データと同型式のデータ（第２中間データ）を生成する処理がある。また、他の１つとしては、ユーザ入力部２０から入力された印刷パラメータ（Ｎ－ｕｐ印刷、拡大／縮小印刷等）に基づいて第１中間データを当該第１中間データと同型式のＮ－ｕｐ印刷，拡大／縮小印刷等用のデータ（第２中間データ）にデータ変換する処理がある。

【００３３】次に、印刷データ生成部３０５は、データ格納部３０４内の第２中間データに蓄えられたデータからＧＤＩコマンド列を再生し、このＧＤＩコマンド列を印刷データとしてその印刷指示とともにプリンタドライバ４０に送出する（ステップ２１３）。この処理に関しては、第２中間データが上述したWMFやEMFで構成される場合は、Windows APIによって印刷可能である。

【００３４】プリンタドライバ４０は、印刷データ生成部３０５から送られてくる印刷指示によりプリンタ５０を起動し、上記印刷データ（ＧＤＩコマンド列）をプリンタ５０に出力する（ステップ２２１）。更に、プリンタ５０は上記印刷データをプリント出力する。

【００３５】このように、本発明の印刷システムは、アプリケーション１０とプリンタドライバ４０との間（インタフェース上）に仮想プリンタドライバ３０（アプリケーションにより実現される）を配置し、この仮想プリンタドライバ３０において、アプリケーション１０より印刷指示されたアプリケーションデータからＧＤＩコードを再現可能な中間データをまず生成し、更にこの中間データを基にＧＤＩコードを再生することにより印刷データを生成し、プリンタドライバ４０に与えるようにしたものである。つまり、本発明の印刷システムにおいて、仮想プリンタドライバ３０は、アプリケーション側から見ればプリンタドライバにあたり、プリンタドライバ４０側から見ればアプリケーションにあたるものである。このような仮想プリンタドライバ３０を介在させることにより、印刷機能を備えた全てのアプリケーション１０から、いかなるプリンタ５０に対しても、機械読み取り符号の埋め込み印刷、Ｎ－ｕｐ印刷若しくは拡大／縮小印刷等の種々の形態のプリンタ出力を実現できる。

【００３６】次に、この印刷システムにおける印刷処理動作の具体例について図４に示すフローチャートを参照して詳述する。図５は、この図４に示すフローチャートに沿った印刷処理を説明するために用いる本印刷システムの概略構成図ある。尚、この図４に示すフローチャートは、特に、ユーザより印刷指示された電子ファイルに機械可読符号を埋め込み印刷する場合の印刷処理に対応するものである。この場合、仮想プリンタドライバ３０内の第２中間データ生成部３０３としては、図６に示す如く、コードデータ解析部３０３１、埋め込みデータ生成部３０３２、マージ処理部３０３３を具備したもの（符号３０３Ａで表す）を用いる。

【００３７】図５に示す如く、本印刷システムは、アプリケーション１０と、プリンタ５０を制御するプリンタドライバ４０との間に仮想プリンタドライバ３０が存在し、更に仮想プリンタドライバ３０とアプリケーション１０と間には、ＯＳ（オペレーティング・システム）が介在している。アプリケーション１０は、当該アプリケーション１０により生成された電子ファイルの印刷時、例えば同図上部に示すような印刷ダイアログを表示する機能を持つ。このアプリケーション１０の印刷ダイアログにおいて、例えばプロパティを選択することにより、ユーザ入力部２０のプリントダイアログがオープンする。このプリントダイアログは、例えば、図３に示す様なものである。ユーザは、このプリントダイアログを用いて、上記アプリケーション１０から印刷しようとする電子ファイルの印刷パラメータや符号化しようとするデータ（被符号化データ）等を入力する。

【００３８】上記アプリケーション１０において、ある電子ファイルの編集を行っている間（ステップ４０１）、このアプリケーション１０とプリンタ５０との間に介在する仮想プリンタドライバ３０及びプリンタドライバ４０はそれぞれアイドル状態にある。この時、上記アプリケーション１０の実行の制御を行うＯＳは、上記アプリケーション１０より何等かのイベントが指示されたかどうかを監視している（ステップ４１１）。

【００３９】この状態で、上記アプリケーション１０より上記編集中の電子ファイルに対して印刷指示があると（ステップ４０２）、ＯＳでは、イベントが発生しかつそのイベントが印刷指示であることを認識し（ステップ４１１ＹＥＳ）、仮想プリンタドライバ３０に対して起動の指示を送出する（ステップ４１２）。これにより、

仮想プリンタドライバ３０が起動状態となり、まず、初期化の処理を行い（ステップ４２１）、次いでプリンタドライバ４０に起動指示を送出し（ステップ４２２）、その後、プリンタドライバ４０からの初期化完了通知を待つ（ステップ４２３）。

【００４０】これに対し、プリンタドライバ４０は、仮想プリンタドライバ３０からの起動指示により初期化の処理を行った後、初期化完了の通知を仮想プリンタドライバ３０に返送する（ステップ４３１）。仮想プリンタドライバ３０は、上記初期化完了通知を受けると（ステップ４２３ＹＥＳ）、ＯＳに対して初期化完了を通知する。

【００４１】一方、ＯＳでは、上記仮想プリンタドライバ３０への起動指令送出後、この仮想プリンタドライバ３０から初期化完了通知があるかどうかを監視しており、この状態で仮想プリンタドライバ３０より初期化完了通知を受け取ると（ステップ４１３ＹＥＳ）、当該仮想プリンタドライバ３０の準備が完了したとの認識により、アプリケーション１０に対して印刷準備完了通知を送出する（ステップ４１４）。

【００４２】また、アプリケーション１０では、ステップ４０２において印刷指示を発した後、ＯＳの処理が完了したかどうかを監視しており、ＯＳより印刷準備完了通知を受け取ることにより（ステップ４０３ＹＥＳ）、ＯＳの処理が完了したと判断し、そのＯＳに対してコードデータを出力する（ステップ４０４）。

【００４３】このコードデータを受け取ったＯＳでは、所定のコード処理サービスを実施し（ステップ４１５）、このサービス処理後のコードデータを仮想プリンタドライバ３０に送出する。

【００４４】上記ステップ４０４→ステップ４１５の処理は、上述した如く、アプリケーション１０からの印刷指示に基づき図３に示す如くのプリントダイアログ（ユーザ入力部２０）を表示し、上記印刷指示によりアプリケーション１０から入力される印刷対象の文書ファイル内容（コードデータ）に対し、符号化しようとするコード（被符号化コード）や上記コードデータに対する印刷パラメータを上記プリントダイアログを用いてユーザにより入力する処理に相当する。これらアプリケーション１０から入力するコードデータや上記プリントダイアログを用いて入力される被符号化コード及び印刷パラメータは、上記コード処理サービスを経て仮想プリンタドライバ３０に出力される。

【００４５】仮想プリンタドライバ３０では、ＯＳにおける上記ステップ４１５の処理により出力されたコードデータを受け取ると（ステップ４２４）、まず、第１中間データ生成部３０２により、その受け取ったコードデータを基に、その後の処理においてＧＤＩコードに再現可能なフォーマットによって成る第１中間データを作成し（ステップ４２５）、データ格納部３０４に格納する。

【００４６】また、仮想プリンタドライバ３０の第２中間データ生成部３０３Ａ（図６参照）では、ＯＳから受け取った上記コードデータをコードデータ解析部３０３１で解析して該解析結果をマージ処理部３０３３に送出する一方、埋め込みデータ生成部３０３２でユーザ入力部２０から入力された被符号化データに基づき上記印刷指示されたコードデータに埋め込むべき機械可読符号を生成し（ステップ４２６）、マージ処理部３０３３に送出する。

【００４７】更に、マージ処理部３０３３は、データ格納部３０４から第１中間データを読み込んだ後、上記ステップ４２６で生成された機械可読符号をコードデータ解析部３０３１での解析結果及びユーザ入力部２０から入力される印刷パラメータ等に応じて上記第１中間データにマージすることにより第２中間データを生成し（ステップ４２７）、データ格納部３０４に格納する。ここで、第２中間データは上記第１中間データと同様のフォーマットで構成されるものである。

【００４８】その後、仮想プリンタドライバ３０では、印刷データ生成部３０５により、上記第２中間データからＧＤＩコマンド列を再生することにとり印刷データを生成し、該印刷データを印刷指示とともにプリンタドライバ４０に送出する（ステップ４２８）。

【００４９】プリンタドライバ４０は、仮想プリンタドライバ３０から印刷指示及び印刷データ（ＧＤＩコマンド列）を受け取ると（ステップ４３２）、プリンタ５０を起動して当該印刷データを出力する（ステップ４３４）。更に、プリンタ５０はプリンタドライバ４０から受け取った印刷データをプリント出力する。

【００５０】プリンタ５０への印刷データの送出後、プリンタドライバ４０は、仮想プリンタドライバ３０に対して印刷完了の通知を行う。仮想プリンタドライバ３０は、プリンタドライバ４０から上記印刷完了通知を受け取ると、プリンタドライバ４０での処理が完了したものと認識し、ＯＳに対して印刷完了の通知を行う（ステップ４２９）。

【００５１】また、ＯＳは、上記コード処理サービス実行後、仮想プリンタドライバ３０の処理が完了したかどうかを監視しており、この監視中に仮想プリンタドライバ３０から上記印刷完了通知を受け取ることにより（ステップ４１６）、仮想プリンタドライバ３０の処理が終了したと判断し、動作を終了する（ステップ４１７）。また、その際、アプリケーション１０に対しては、ＯＳ処理が完了したことを通知し、以後、上記のイベント監視ループに戻る。他方、アプリケーション１０では、上記コードデータの出力後、ＯＳ処理が完了したかどうかを監視し、ＯＳからの上記ＯＳ処理完了通知を受け取ることにより（ステップ４０５）、一連の印刷処理を終了する。

【００５２】上記一連の処理の説明からも分かるように、仮想プリンタドライバ３０は、ステップ４２４～４２８において以下の（ａ）～（ｃ）の処理を行っている。

【００５３】（ａ）アプリケーション１０から印刷指示のあった電子ファイルからＧＤＩコードにより再生可能な第１中間データを生成する。

【００５４】（ｂ）上記印刷指示に伴って入力される被符号化データから機械可読符号を生成した後、この機械可読符号を上記第１中間データにマージすることにより当該第１中間データと同じフォーマットの第２中間データを生成する。

【００５５】（ｃ）第２中間データからＧＤＩコード列を再生することにより印刷データを生成し、プリンタドライバ４０に印刷指示する。

【００５６】この（ａ）～（ｃ）の処理後の印刷データにはユーザ入力部２０からユーザによって設定された機械可読符号がマージされているから、この印刷データをプリンタドライバ４０を通じてプリンタ５０でプリント出力することにより、上記アプリケーションデータに上記機械可読符号が埋め込み印刷されたプリント出力を得ることができる。

【００５７】一例として、図７は、ワープロ、スプレッドシート、ドロウイングツールの各アプリケーション（１０）からそれぞれの電子ファイルに機械可読符号（同図塗りつぶし部分）を埋め込み印刷する場合の印刷イメージを示したものである。

【００５８】この場合の印刷処理において、まず、ユーザが上記各アプリケーション１０で電子ファイルの印刷を実行すると、図３に示す如くのプリントダイアログが表示される。ここで、機械可読符号として符号化したいデータ（被符号化データ）を入力する。特に、図３におけるダイアログ上では、データ型として「整数」、値として「1234567890」を符号化する例を示している。被符号化データを入力した後、ダイアログ上の「ＯＫ」ボタンを押すと、仮想プリンタドライバ３０内で上記被符号化データの符号化が行われ、この符号化データが第１中間データにマージされて第２中間データが生成された後、更にこの第２中間データがＧＤＩコード列により再現された印刷データとなってプリンタドライバ４０に渡され、プリンタ５０により図７に示すような符号化データが埋め込み印刷されたプリント出力を得ることができる。

【００５９】このように、アプリケーション１０とプリンタドライバ４０間に配置されてＧＤＩコード列により再生可能な中間データ上で機械可読符号の埋め込みを行う仮想プリンタドライバ３０を有する本発明の構成によれば、印刷機能を備えるアプリケーション１０であれば、図７に示したようなワープロ、スプレッドシート、ドロウイングツールなどの全てのアプリケーションから、その中の電子ファイルに対して、いかなるプリンタ５０を用いた場合にも機械可読符号の埋め込み印刷が行えるようになる。

【００６０】なお、この印刷システムで埋め込み印刷する機械可読符号としては、バーコードやデータグリフ等を用いることができる。また、この機械可読符号のコンテントとしては、後述するように、印刷対象の電子ファイルをサーバに登録する際の登録ＩＤが考えられる。この場合、機械可読符号を埋め込み印刷した出力用紙上で、スキャナにより上記機械可読符号を読み取り走査し、その読み取り結果から登録ＩＤを認識して上記サーバから当該登録ＩＤに対応する電子ファイルを検索する等の運用が可能となる。

【００６１】機械可読符号のこの他の例としては、印刷された電子ファイルの識別子、該電子ファイルの供給元ホスト装置名、該電子ファイルを作成したＯＳ名あるいはユーザ名、該電子ファイルの印刷日時やページ数等、様々な情報が考えられる。更には、出力用紙上に印刷された電子ファイルに対して「重要」，「極秘」等の文字をすかし印刷（Watermark）するなどといった用途にも適用できる。

【００６２】また、この例では、第１中間データに予め機械可読符号をマージして第２中間データを生成した後にプリンタドライバ４０に送出するようにしているが、この処理の代わりに、プリンタドライバ４０に印刷指示を送る処理の中で、機械可読符号をＧＤＩコマンド列として送出するようにしても良い。

【００６３】ところで、上記機械可読符号の埋め込み印刷処理は、アプリケーションデータそのもののデータ変換を行わず、このアプリケーションデータにサーバ登録ＩＤ等の付加情報を加えて印刷する処理である。この他、本発明の印刷システムは、アプリケーションデータそのものをデータ変換して印刷出力する構成とすることもできる。このようなデータ変換を伴う印刷処理の例としては、Ｎ－ｕｐ印刷、拡大若しくは縮小印刷等が考えられる。また、仮想プリンタドライバ３０で利用可能なフォーマットを有する何等かのファイルを生成する等の処理もこれに相当する。このような印刷処理機能を付加するには、例えば、仮想プリンタドライバ３０内の第２中間データ生成部３０３として、図８に示す如く、コードデータ解析部３０３１及びデータ変換部３０３４を具備したもの（符号３０３Ｂで表す）を用いれば良い。

【００６４】仮想プリンタドライバ３０内に第２中間データ生成部３０３Ｂを採用して成る印刷システムにおける印刷処理について以下に簡単に説明する。なお、この場合の印刷システムでの印刷処理は、機械可読符号等の付加情報を埋め込み印刷する印刷システムでの図４に示すフローチャートに沿った処理のうち、仮想プリンタドライバ３０によるステップ４２４からステップ４２７の処理を以下に述べるような処理に置換することにより実

現できる。

【００６５】今、図８に示す如くの第２中間データ生成部３０３Ｂを用いた印刷システムにおいて、アプリケーション１０から印刷指示がなされた後、プリントダイアログ（図３参照）上で、Ｎ－ｕｐ印刷が指示されたものとする。このプリントダイアログによる設定操作が完了すると、アプリケーション１０からはこの時に印刷指示された電子ファイルのコードデータが、またユーザ入力部２０からは上記Ｎ－ｕｐ印刷を指示する印刷パラメータがそれぞれ仮想プリンタドライバ３０に入力される。

【００６６】仮想プリンタドライバ３０では、アプリケーション１０から入力されるコードデータを受け取ると、まず、第１中間データ生成部３０２により、その受け取ったコードデータを基に、その後の処理においてＧＤＩコードに再現可能なフォーマットによって成る第１中間データを作成し、データ格納部３０４に格納する。

【００６７】また、仮想プリンタドライバ３０の第２中間データ生成部３０３Ｂ（図８参照）では、アプリケーション１０から受け取った上記コードデータをコードデータ解析部３０３１で解析して該解析結果をデータ変換部３０３４に送出する一方、ユーザ入力部２０から入力された印刷パラメータを当該データ変換部３０３４に取り込む。

【００６８】その後、データ変換部３０３４は、データ格納部３０４から第１中間データを読み込んだ後、コードデータ解析部３０３１での解析結果を参照しながら、ユーザ入力部２０から入力された印刷パラメータに従って上記第１中間データをＮ－ｕｐ印刷用のデータに変換することにより第２中間データを生成し、データ格納部３０４に格納する。

【００６９】更に、仮想プリンタドライバ３０では、印刷データ生成部３０５により、上記第２中間データからＧＤＩコマンド列を再生することによりり印刷データを生成し、該印刷データを印刷指示とともにプリンタドライバ４０に送出する。

【００７０】プリンタドライバ４０は、仮想プリンタドライバ３０から印刷指示及び印刷データ（ＧＤＩコマンド列）を受け取ると、プリンタ５０を起動して当該印刷データを出力し、更に、プリンタ５０はプリンタドライバ４０から受け取った印刷データをプリント出力する。

【００７１】図８は、上記印刷処理に基づくプリント出力例を示したものである。この例では、例えば、２ページから成る電子ファイルに対して１－ｕｐ印刷が指示された場合には、これら各通ページの電子ファイルが個々の（２枚の）出力用紙にそれぞれ通常印刷され、上記電子ファイルに対して２－ｕｐ印刷が指示された場合には、上記２ページ分の電子ファイルが１枚の出力用紙に印刷されている。

【００７２】このＮ－ｕｐ印刷の他、縮小／拡大印刷、あるいは仮想プリンタドライバ３０で用いための何等かのデータを得る場合等に際しても同様の処理により対処可能である。

【００７３】なお、先に述べた例では、印刷指示されたアプリケーションデータに付加情報を付加して印刷する処理と、該アプリケーションデータをＮ－ｕｐ印刷や縮小あるいは拡大印刷用のデータに変換する処理とを別々に実施するものについて述べたが、これらの処理を併用したシステム構成も可能である。

【００７４】次に、本発明の他の実施の形態について説明する。図１０は本発明の他の実施の形態に係わる印刷システムの概略構成を示すブロック図であり、図１に示した印刷システムの各部と同様の機能を果たす部分には同一の符号を付している。

【００７５】この印刷システムにおいて、仮想プリンタドライバ３０Ａには、アプリケーション１０から印刷指示されたアプリケーションデータの印刷時、該印刷処理以外の処理の制御を行う非印刷処理制御部３０６が設けられている。この非印刷処理制御部３０６は、所定のインタフェースを介してサーバ６０などの外部装置と接続されている。この印刷システムの概略動作について図１１に示すフローチャートを参照して説明する。尚、この図１１に示すフローチャートにおいても、図１に示したシステムでの処理と同様の処理については同一の符号を付している。

【００７６】この印刷システムにおいて、アプリケーション１０から任意の電子ファイルを印刷しようとする場合、ユーザがその印刷しようとする電子ファイルに対する印刷指示を発行する（ステップ２０１）。この印刷指示が発行されることにより、ユーザ入力部２０では、例えば図３に示すようなプリントダイアログを表示し、上記印刷指示のなされた電子ファイルに関連する印刷条件の設定を受け付ける処理に移行する（ステップ２０２）。

【００７７】また、この印刷システムでは、上記プリントダイアログとは別のダイアログ（図示せず）を用いて、あるいは所定の入力機能によって、上記印刷指示した電子ファイルに対する印刷処理以外の非印刷処理の起動指示を発行する（ステップ２０３）。

【００７８】上記印刷条件設定操作及び上記非印刷処理起動指示操作が完了すると、上記アプリケーション１０からは上記印刷指示のなされた電子ファイルのコードデータが、また上記ユーザ入力部２０からはユーザにより設定されたＮ－ｕｐ印刷等の印刷パラメータや被符号化データがそれぞれ仮想プリンタドライバ３０に入力される。この時、ユーザ入力部２０から入力される情報には上記非印刷処理起動指示情報も含まれる。

【００７９】仮想プリンタドライバ３０Ａでは、まず、第１中間データ生成部３０２において、アプリケーション１０から送られてくる上記コードデータから第１中間データを生成し（ステップ２１１）、データ格納部３０

４に格納する。一方、ユーザが設定した上記印刷条件情報は、ユーザ入力部２０から第２中間データ生成部３０３に入力される。第２中間データ生成部３０３は、データ格納部３０４に格納されている第１中間データ生成部３０３から上記印刷条件に従って第２中間データを生成し（ステップ２１２）、データ格納部３０４に格納する。

【００８０】次に、印刷データ生成部３０５は、データ格納部３０４内の第２中間データに蓄えられたデータからＧＤＩコマンド列を再生し、このＧＤＩコマンド列を印刷データとしてその印刷指示とともにプリンタドライバ４０に送出する（ステップ２１３）。

【００８１】プリンタドライバ４０は、印刷データ生成部３０５から送られてくる印刷指示によりプリンタ５０を起動し、当該印刷指示とともに送られてくる印刷データ（ＧＤＩコマンド列）をプリンタ５０に出力する（ステップ２２１）。更に、プリンタ５０はその印刷データをプリント出力する。

【００８２】また、ステップ２１３における印刷指示の送出後、仮想プリンタドライバ３０Ａの制御部３０１では、ユーザ入力部２０から非印刷処理の起動指示が入力されているか否かをチェックし（ステップ２１４）、当該起動指示が入力されていない場合（ステップ２１４ＮＯ）、処理を終了する。これに対し、非印刷処理の起動指示が入力されている場合（ステップ２１４ＹＥＳ）、非印刷処理制御部３０６を起動し、当該起動指示がなされている非印刷処理を実行する（ステップ２１５）。

【００８３】図１０に示す印刷システムにおいて、例えば、アプリケーションデータの印刷処理とともに当該データをサーバ６０に登録する場合には、上記ステップ２０３において、非印刷処理起動指示として「サーバ登録」を意味する指示情報を入力する。この時、仮想プリンタドライバ３０Ａの制御部３０１では、上記ステップ２１４において当該指示情報を基に「サーバ登録」が起動指示されていることを認識し、非印刷処理処理制御部３０６に対してサーバ登録起動の通知を行う。非印刷処理制御部３０６は、上記通知を受け取ることにより、データ格納部３０４に格納されている第２中間データを読み出し、当該第２中間データを例えば上記プリントダイアログを用いて指定された登録ＩＤを付加してサーバ６０に登録する。

【００８４】この他、外部装置としてメールサーバやファクシミリ装置を接続しておき、非印刷処理制御部３０６にこれら外部装置の制御機能を付加しておけば、アプリケーション１０からの印刷指示により該当する電子ファイルを印刷しながら、当該電子ファイルをメールサーバを通じてメール送信したり、あるいは当該電子ファイルをファクシミリ装置に転送して相手先にファクシミリ送信する等の様々な処理に対応できる。

【００８５】

【発明の効果】以上説明したように、本発明によれば、アプリケーションから印刷指示されたアプリケーションデータからプリンタの印刷処理に適合する印刷データを再現し得る中間データを生成し、更にこの中間データから上記印刷データを再生してプリンタに送出するようにしたため、印刷機能を有する様々なアプリケーションのデータをいかなるプリンタからもプリント出力することができる。

【００８６】また、本発明では、上記中間データ上で機械可読符号をマージする処理機能を付加したため、アプリケーションデータに機械可読符号を埋め込んでプリントする場合にも、プリンタを選ばずに当該プリント出力が行える。

【００８７】また、本発明では、アプリケーションから印刷指示されたアプリケーションデータを上記中間データ上でデータ変換する機能を付加したため、上記アプリケーションデータに対してＮ－ｕｐ，拡大／縮小プリント等を行う場合にも、プリンタを選ばずに当該プリント出力が行えるようになる。

【００８８】更に、本発明では、印刷データ作成処理を行いながら非印刷処理動作を実行する機能を付加したため、アプリケーションデータの印刷処理と並行してこのアプリケーションデータに関するサーバ登録やファクシミリ送信等の非印刷処理動作を実行できるようになる。

【図面の簡単な説明】

【図１】本発明の一実施の形態に係わる印刷システムの概略構成図。

【図２】図１における印刷システムの印刷処理動作を示すフローチャート。

【図３】印刷条件の設定に用いるプリントダイアログの一例を示す図。

【図４】符号埋め込み印刷時におけるシステム全体の処理動作を示すフローチャート。

【図５】図４に示す処理動作を説明するために用いる本印刷システムの概略構成図。

【図６】符号埋め込み印刷に適応する第２中間データ生成部の構成を示す図。

【図７】符号埋め込み印刷時のプリント出力イメージを示す図。

【図８】データ変換を伴う印刷処理に適応する第２中間データ生成部の構成を示す図。

【図９】データ変換を伴う印刷処理時のプリント出力例を示す図。

【図１０】本発明の他の実施の形態に係わる印刷システムの概略構成図。

【図１１】図１０における印刷システムの印刷処理動作を示すフローチャート。

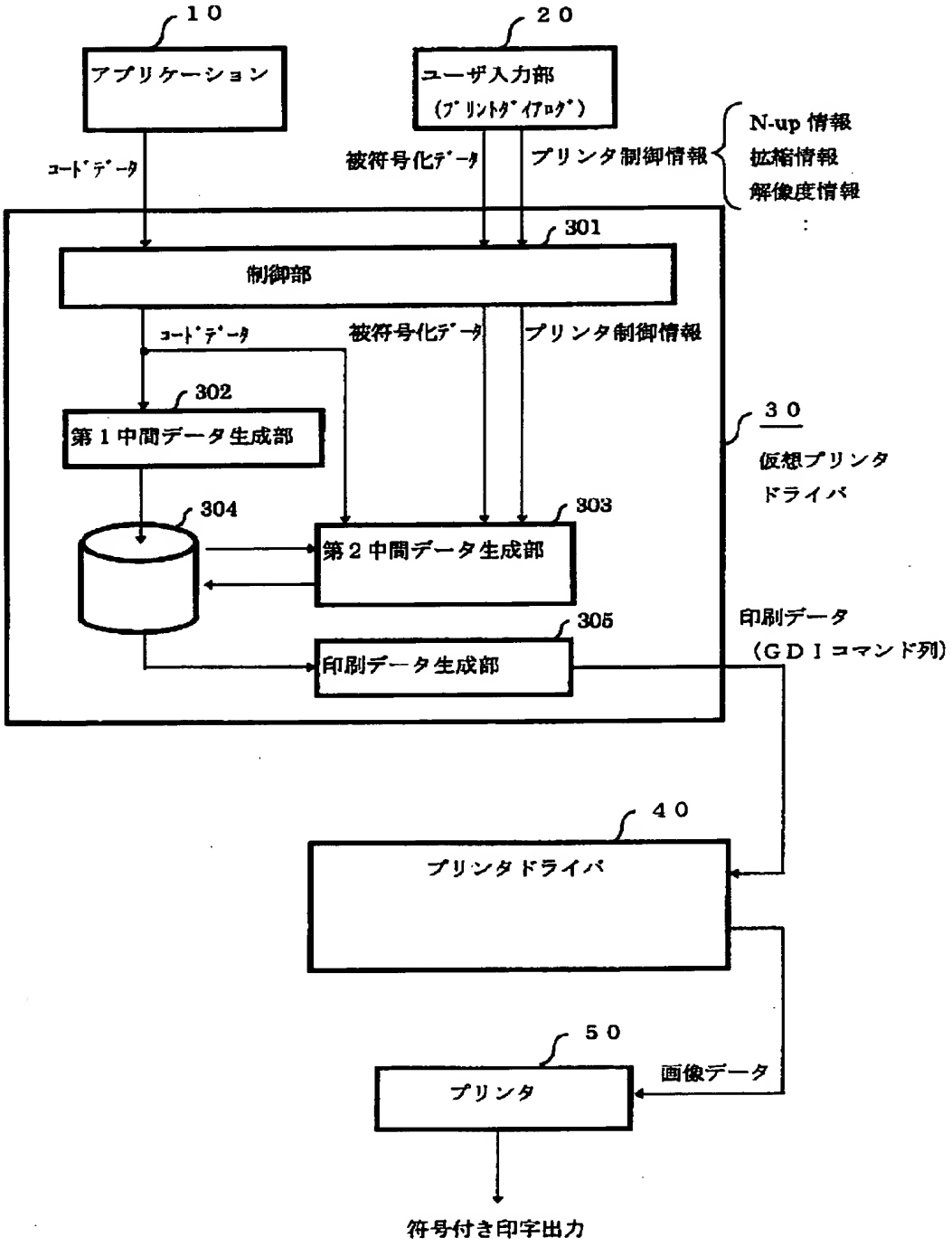
【符号の説明】

１０…アプリケーション、２０…ユーザ入力部（プリントダイアログ）、３０，３０Ａ…仮想プリンタドライ

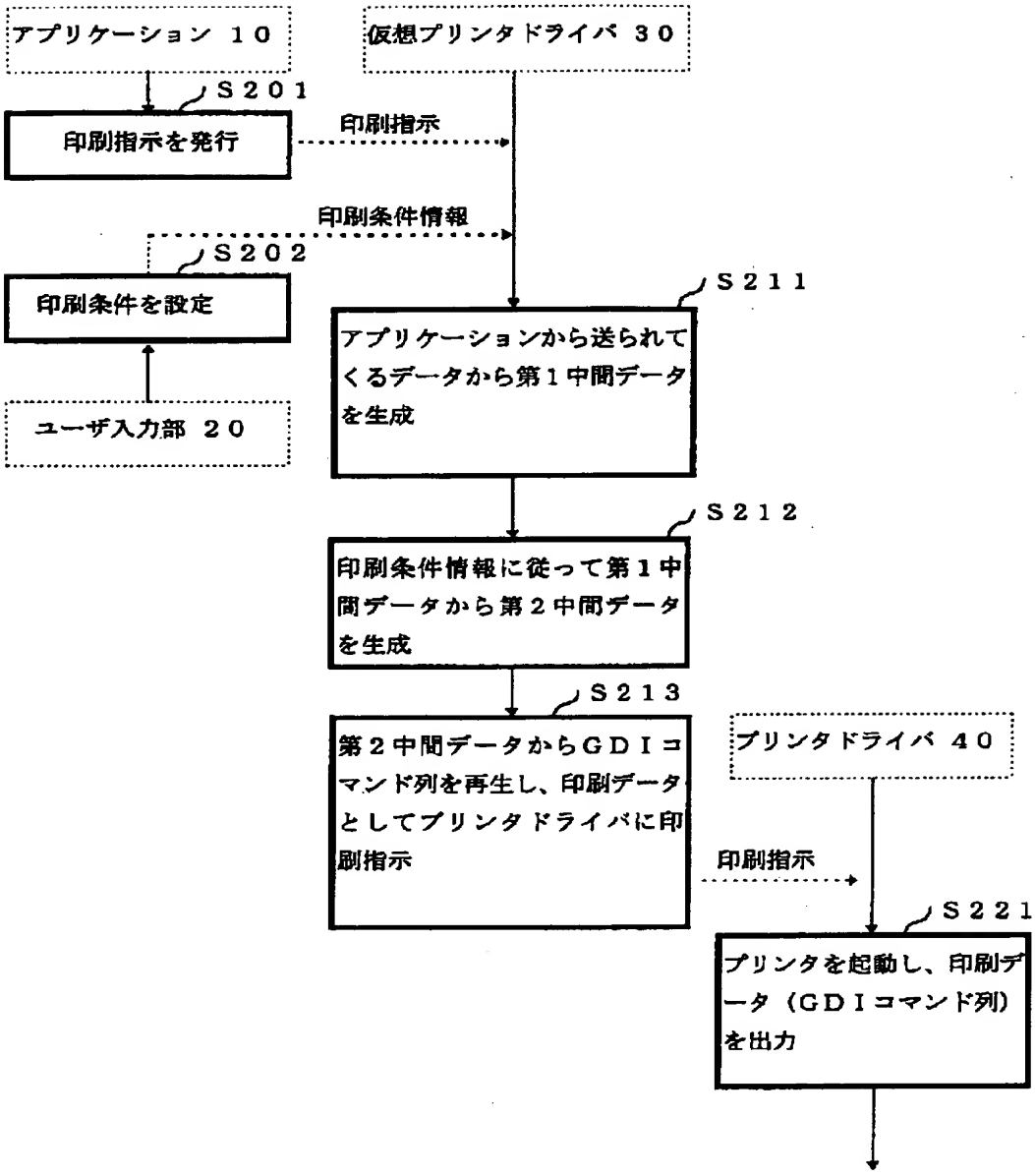
17　　18

バ、３０１…制御部、３０２…第１中間データ生成部、３０３，３０３Ａ，３０３Ｂ…第２中間データ生成部、３０３１…コードデータ解析部、３０３２…埋め込みデータ生成部、３０３３…マージ処理部、３０３４…データ変換部、３０４…データ格納部、３０５…印刷データ生成部、３０６…非印刷処理制御部、４０…プリンタドライバ、５０…プリンタ、６０…サーバ

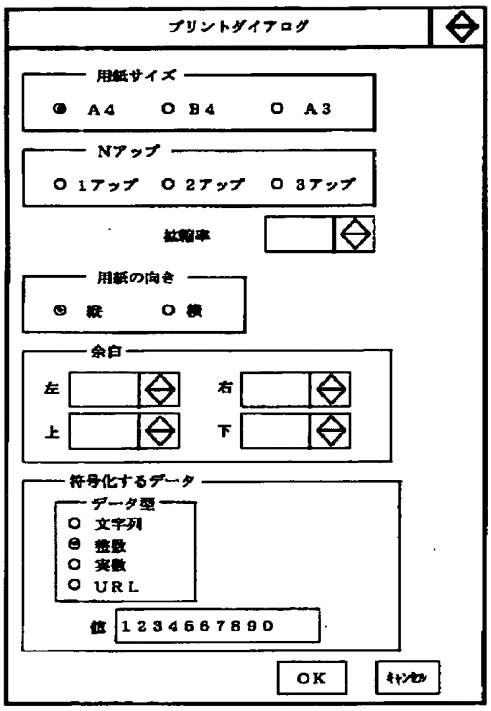
【図１】



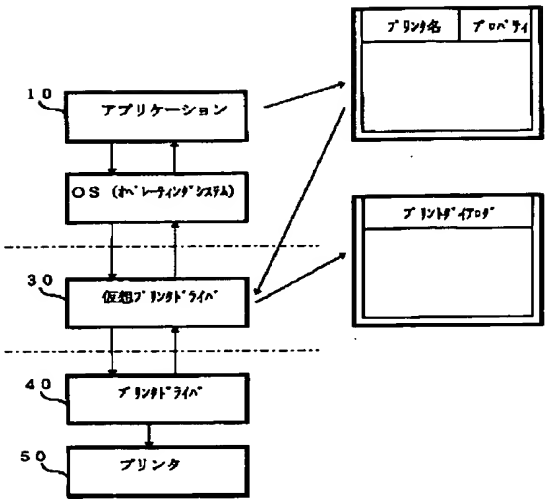
【図２】


アプリケーション １０
仮想プリンタドライバ ３０
Ｓ２０１
印刷指示を発行
印刷指示
印刷条件情報
Ｓ２０２
印刷条件を設定
ユーザ入力部 ２０
Ｓ２１１
アプリケーションから送られてくるデータから第１中間データを生成
Ｓ２１２
印刷条件情報に従って第１中間データから第２中間データを生成
Ｓ２１３
第２中間データからＧＤＩコマンド列を再生し、印刷データとしてプリンタドライバに印刷指示
プリンタドライバ ４０
印刷指示
Ｓ２２１
プリンタを起動し、印刷データ（ＧＤＩコマンド列）を出力

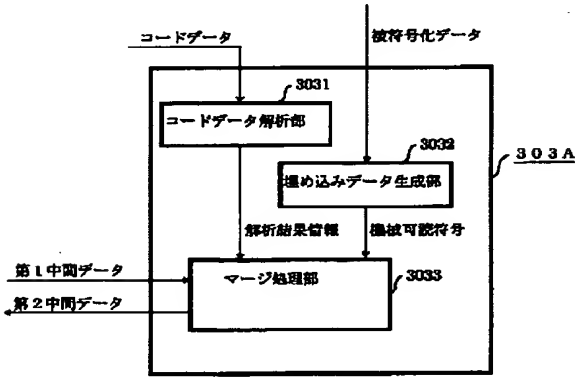
【図３】


プリントダイアログ
用紙サイズ
A4　B4　A3
Nアップ
1アップ　2アップ　3アップ
拡縮率
用紙の向き
縦　横
余白
左
右
上
下
符号化するデータ
データ型
文字列
整数
実数
URL
値
1234667890
OK
キャンセル

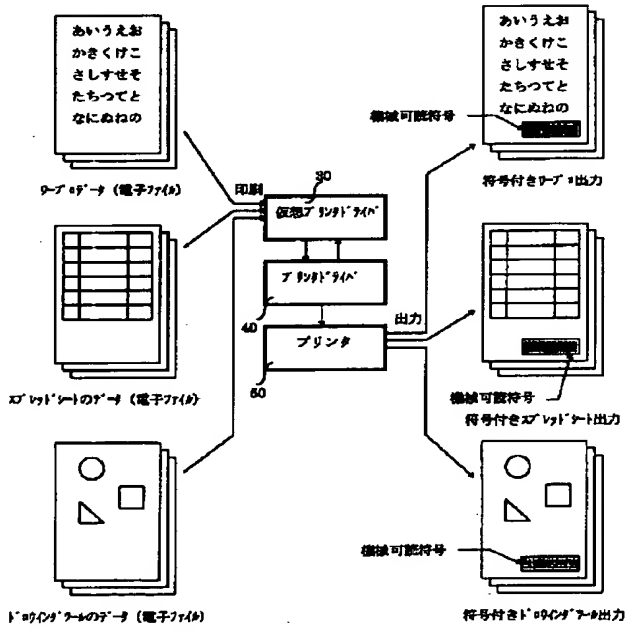
【図５】


10
アプリケーション
OS（オペレーティングシステム）
30
仮想プリンタドライバ
40
プリンタドライバ
50
プリンタ
プリンタ名
プロパティ
プリントダイアログ

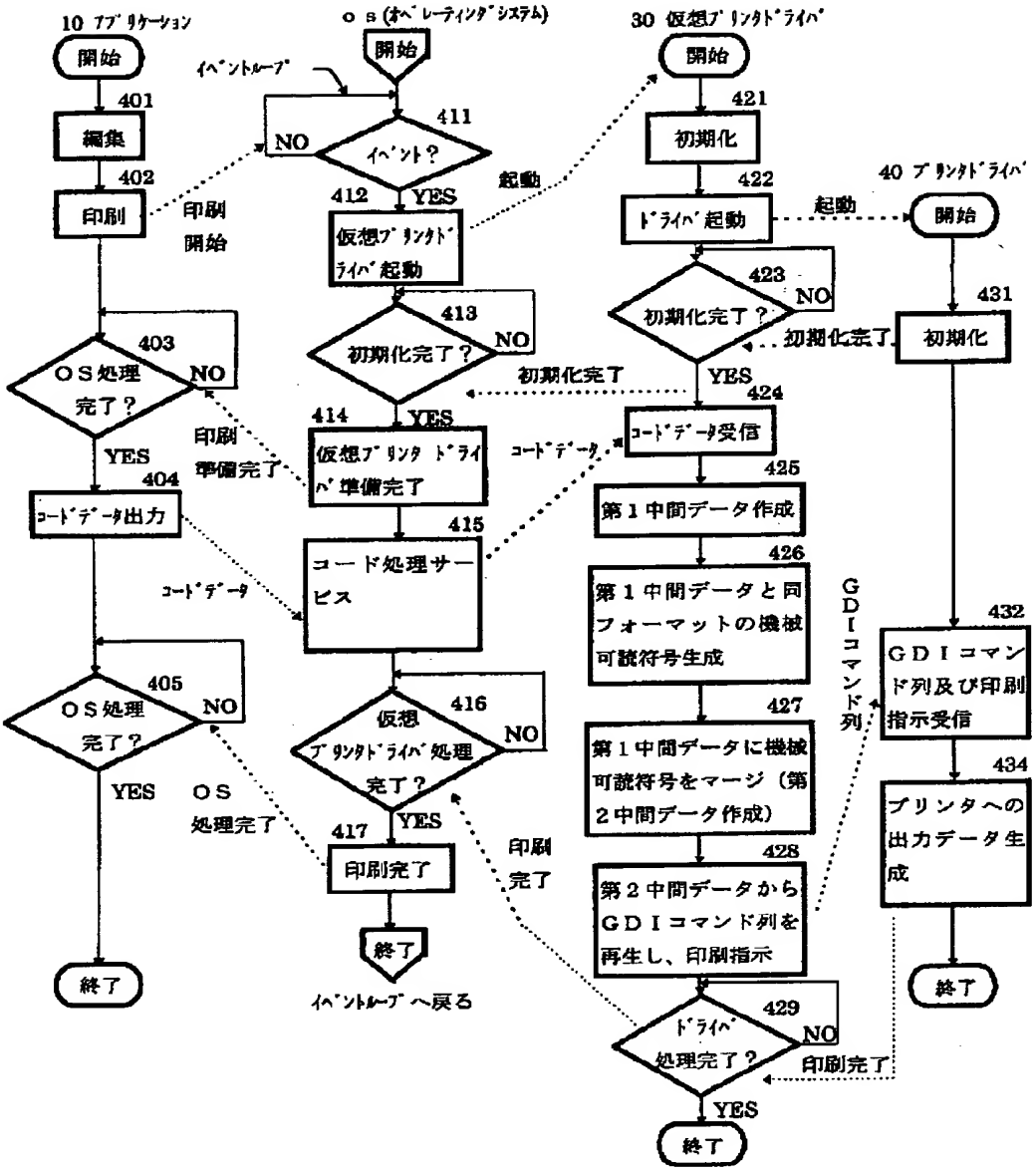
【図６】


コードデータ
被符号化データ
3031
コードデータ解析部
3032
埋め込みデータ生成部
303A
解析結果情報
機械可読符号
第１中間データ
第２中間データ
マージ処理部
3033

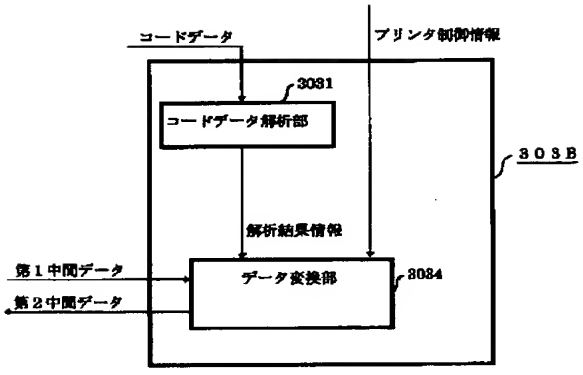
【図７】


あいうえお
かきくけこ
さしすせそ
たちつてと
なにぬねの
ワープロデータ（電子ファイル）
印刷
30
仮想プリンタドライバ
プリンタドライバ
40
プリンタ
50
出力
スプレッドシートのデータ（電子ファイル）
ドローイングツールのデータ（電子ファイル）
機械可読符号
符号付きワープロ出力
機械可読符号
符号付きスプレッドシート出力
機械可読符号
符号付きドローイングツール出力

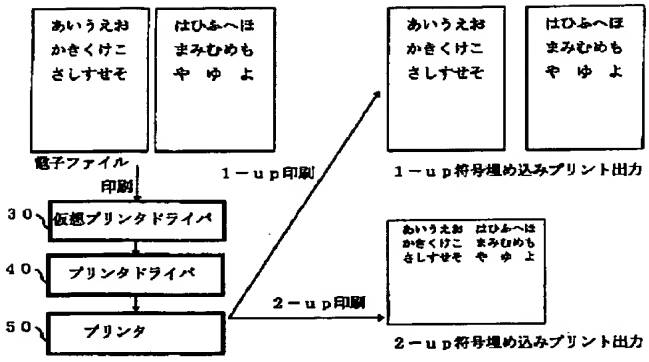
【図４】


10 アプリケーション
開始
401
編集
402
印刷
印刷開始
403
OS処理完了？
NO
YES
404
コードデータ出力
405
OS処理完了？
NO
YES
終了
OS処理完了
コードデータ
OS (オペレーティングシステム)
開始
イベントループ
411
イベント？
NO
YES
412
仮想プリンタドライバ起動
起動
413
初期化完了？
NO
YES
414
仮想プリンタドライバ準備完了
印刷準備完了
415
コード処理サービス
416
仮想プリンタドライバ処理完了？
NO
YES
417
印刷完了
終了
イベントループへ戻る
印刷完了
30 仮想プリンタドライバ
開始
421
初期化
422
ドライバ起動
起動
423
初期化完了？
NO
YES
初期化完了
初期化完了
424
コードデータ受信
コードデータ
425
第１中間データ作成
426
第１中間データと同フォーマットの機械可読符号生成
427
第１中間データに機械可読符号をマージ（第２中間データ作成）
428
第２中間データからＧＤＩコマンド列を再生し、印刷指示
429
ドライバ処理完了？
NO
YES
終了
印刷完了
GDIコマンド列
40 プリンタドライバ
開始
431
初期化
432
ＧＤＩコマンド列及び印刷指示受信
434
プリンタへの出力データ生成
終了

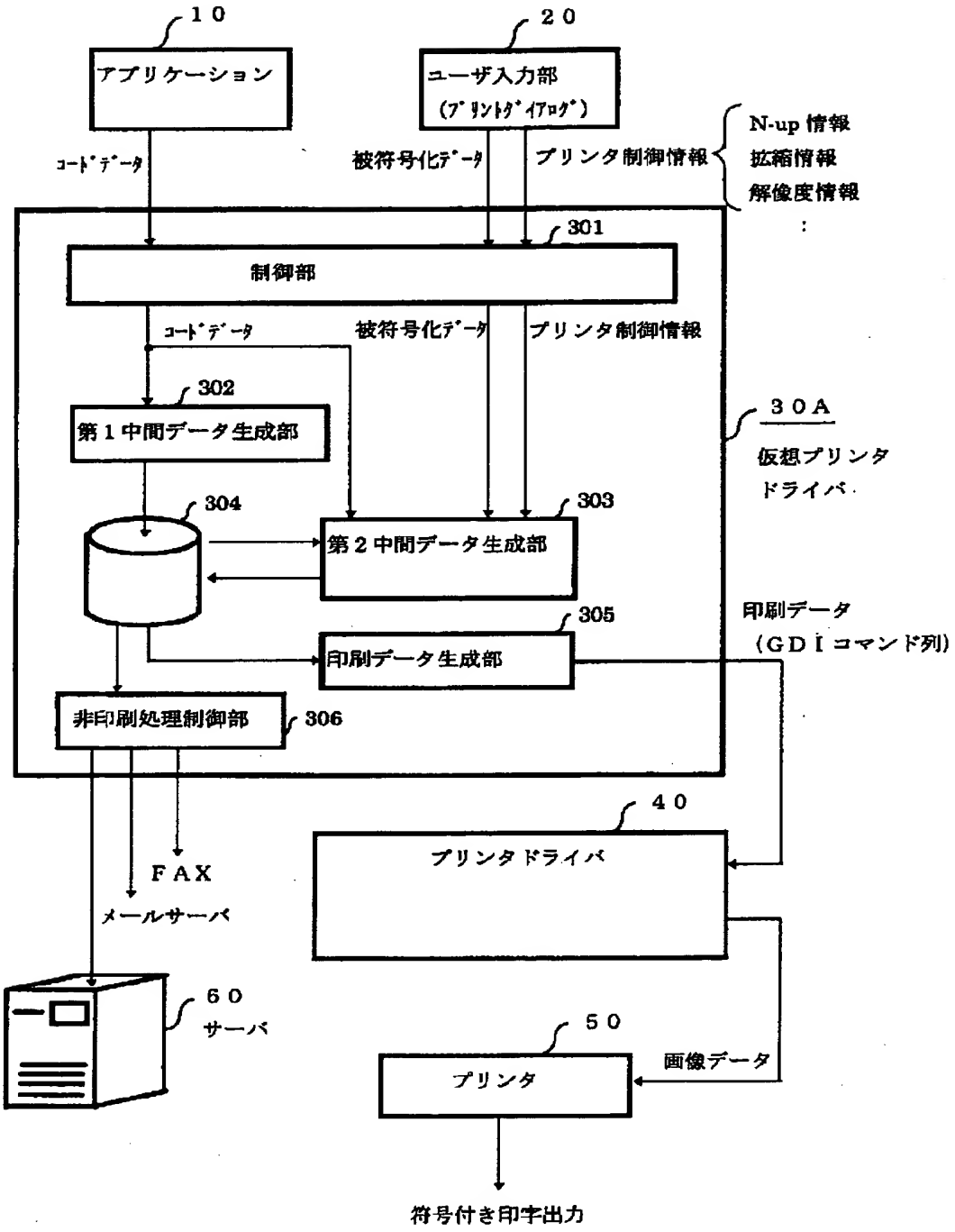
【図８】


コードデータ
プリンタ制御情報
3031
コードデータ解析部
303B
解析結果情報
第１中間データ
第２中間データ
データ変換部
3034

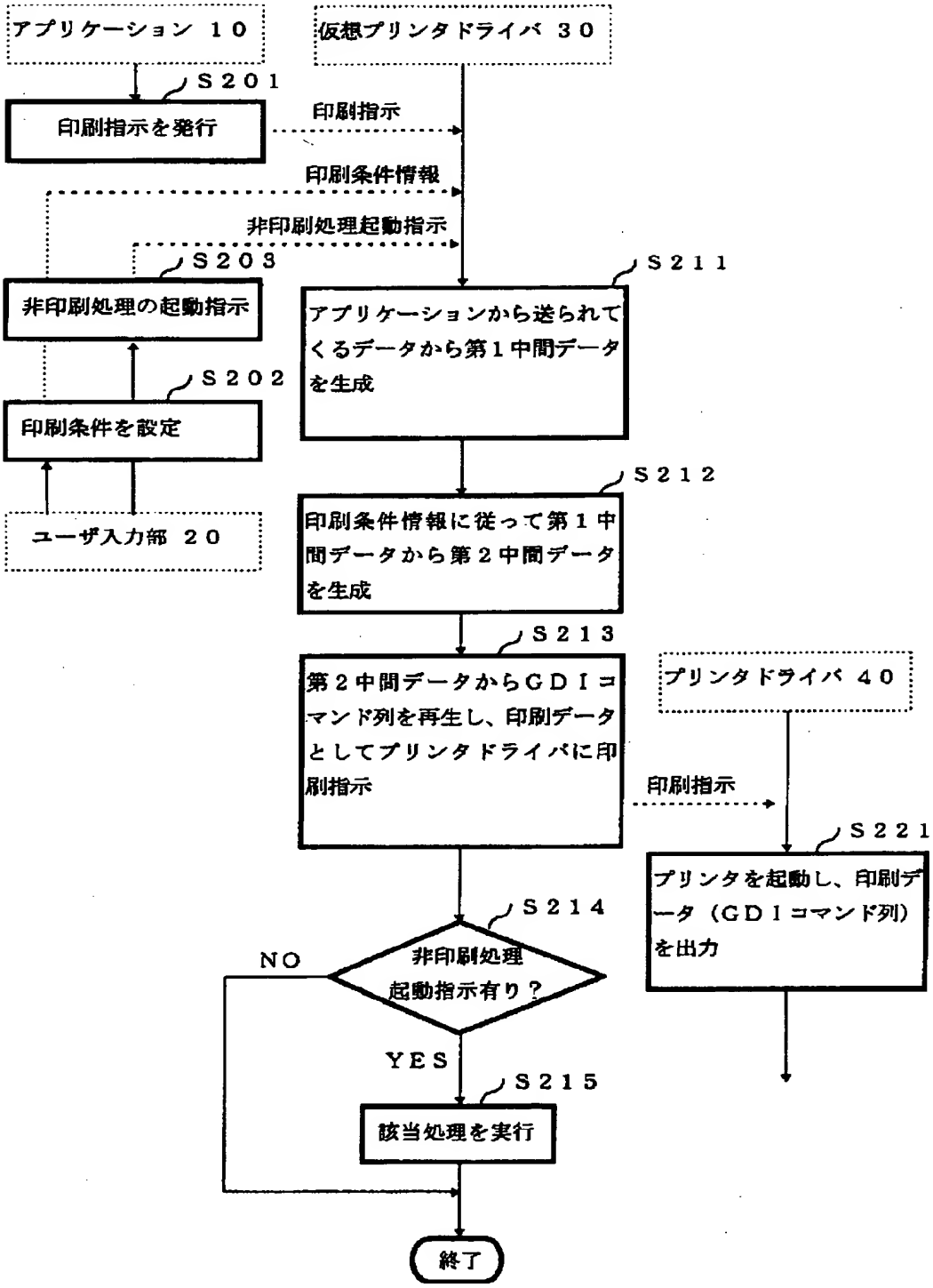
【図９】


あいうえお
かきくけこ
さしすせそ
はひふへほ
まみむめも
や ゆ よ
電子ファイル
印刷
30
仮想プリンタドライバ
40
プリンタドライバ
50
プリンタ
1－up印刷
2－up印刷
1－up符号埋め込みプリント出力
2－up符号埋め込みプリント出力

【図１０】


１０
アプリケーション
２０
ユーザ入力部
(ﾌﾟﾘﾝﾄﾀﾞｲｱﾛｸﾞ)
N-up 情報
拡縮情報
解像度情報
：
ｺｰﾄﾞﾃﾞｰﾀ
被符号化ﾃﾞｰﾀ
プリンタ制御情報
３０１
制御部
ｺｰﾄﾞﾃﾞｰﾀ
被符号化ﾃﾞｰﾀ
プリンタ制御情報
３０２
第１中間データ生成部
３０Ａ
仮想プリンタ
ドライバ
３０４
３０３
第２中間データ生成部
印刷データ
(ＧＤＩコマンド列)
３０５
印刷データ生成部
非印刷処理制御部
３０６
４０
プリンタドライバ
ＦＡＸ
メールサーバ
６０
サーバ
５０
プリンタ
画像データ
符号付き印字出力

【図１１】


アプリケーション １０
仮想プリンタドライバ ３０
Ｓ２０１
印刷指示を発行
印刷指示
印刷条件情報
非印刷処理起動指示
Ｓ２０３
非印刷処理の起動指示
Ｓ２１１
アプリケーションから送られてくるデータから第１中間データを生成
Ｓ２０２
印刷条件を設定
Ｓ２１２
印刷条件情報に従って第１中間データから第２中間データを生成
ユーザ入力部 ２０
Ｓ２１３
第２中間データからＧＤＩコマンド列を再生し、印刷データとしてプリンタドライバに印刷指示
プリンタドライバ ４０
印刷指示
Ｓ２２１
プリンタを起動し、印刷データ（ＧＤＩコマンド列）を出力
Ｓ２１４
非印刷処理起動指示有り？
NO
YES
Ｓ２１５
該当処理を実行
終了